Chapter 2 – Equations

Linear Equation in one variable and two variable

Past Year Questions

PYQ May 18

(1) If $2^{x+y} = 2^{2x-y} = \sqrt{8}$, then the respective values of x and y are ___

a. $1, \frac{1}{2}$ b. $\frac{1}{2}, 1$

c. $\frac{1}{2}, \frac{1}{2}$ d. None of these

PYQ May 18

(2) If $\frac{3}{x+y} + \frac{2}{x-y} = -1$ and $\frac{1}{x+y} - \frac{1}{x-y} = \frac{4}{3}$ then (x, y) is:

a. (2,1) b. (1,2)

c. (-1,2) d. (-2,1)

PYQ Nov. 19

(3) $\frac{2x+5}{10} + \frac{3x+10}{15} = 5$, find x

a. 10.58 b. 9.58

c. 9.5 d. None of these

PYQ Nov. 19

(4) Find value of $x^2 - 10x + 1$ if $x = \frac{1}{5-2\sqrt{6}}$

a. 25 b. 1

c. 0 d. 49

Note: Que to be shifted to Quadratic Equation Topic

PYQ July 21

(5) ☆ The cost of 2 oranges and 3 apples is ₹ 28. If the cost of an apple is doubled then the cost of 3 oranges and 5 apples is ₹ 75. The original cost of 7 oranges and 4 apples (in (₹)) is:

a. 59 b. 47

c. 71 d. 63

PYQ Dec. 21

(6) ☆ In a multiple choice question paper consisting of 100 questions of 1 mark each, a candidate gets 60% marks. If the candidate attempted all questions and there was a penalty of 0.25 marks for wrong answers is:

a. 32 b. 36

c. 40 d. 38

PYQ June 22

(7) The values of x and y satisfying the equations $\frac{3}{x+y} + \frac{2}{x-y} = 3, \frac{2}{x+y} + \frac{3}{x-y} = 3\frac{2}{3}$ are given by

a. (1,2) b. (-1, -2)

c. (1, ½) d. (2, 1)

PYQ June 22

(8) ☆ A plumber can be paid either ₹ 600 and ₹ 50 per hour or ₹ 170 per hour. If the job takes 'n' hour, for what value of 'n' the second method earns better wages for the plumber?

a. 5 b. 6

c. 4 d. 7

PYQ Dec 22

(9) The solution of the following system of linear equations $2x - 5y + 4 = 0$ and $2x + y - 8 = 0$ will be:

a. (2, -3) b. (1, -3)

c. (3, 2) d. (-2, 2)

Answer Key

1	a	2	b	3	b
4	c	5	a	6	a
7	d	8	a	9	c

Linear Equation in one variable and two variable

Mock Test Paper Questions

MTP May 18

(1)

x	5	6	7	8
y	11	13	15	17

In the above table corresponding values of two variable x and y have been given. Which of the following equations establishes the relationship between the two variables?

a. $y = 3x+2$ b. $y = 2x-1$

c. $y = 2x+1$ d. $y = 3x+1$

MTP Nov 20

(2) ☆ If $2x - 3y = 1$ and $5x + 2y = 50$, then what is the value of $(x-2y)$?

a. - 2 b. 6

c. 7 d. 10

MTP Nov 21

(3) ☆ If $xy + yz + zx = -1$, then the value of $\left(\frac{x+y}{1+xy} + \frac{z+y}{1+zy} + \frac{x+z}{1+zx}\right)$ is

a. xyz b. $-\frac{1}{yz}$

c. $\frac{1}{xyz}$ d. $\frac{1}{x+y+z}$

MTP Nov 21

(4) ☆ The value of 'k 'for system of equations $kx+2y = 5$ and $3x+y = 1$ has no solution is:

a. 5 b. 2/3

c. 6 d. 3/2

MTP Nov 21

(5) ☆ The cab bill is partly fixed and partly varies on the distance covered. For 456 km the bill is ₹ 8252, for 484 km the bill is Rs. 8728. What will the bill be for 500km?

a. ₹ 8876 b. ₹ 9156

c. ₹ 9472 d. ₹ 9000

MTP Oct 21

(6) The point of intersection between the lines $3x+4y = 7$ and $4x - y = 3$ lie in the

a. 1st quadrant. b. 2nd quadrant.

c. 3rd quadrant d. 4th quadrant.

MTP Oct 21

(7) If $\sqrt{1+\frac{25}{144}} = 1+\frac{x}{12}$, then x is

a. 1 b. 2

c. 3 d. 0

MTP June 22

(8) If $2^{x+y} = 2^{2x-y} = \sqrt{8}$ then the respective values of x and y are ___

a. 1, ½ b. ½, 1

c. ½, ½ d. none of these

MTP Dec 22 Series II

(9) $\frac{2x+5}{10} + \frac{3x+10}{15} = 5$, then the value of x

a. 10.58 b. 9.58

c. 9.5 d. None of these

MTP June 2023 Series II

(10) Solve for x; y an z.

$\frac{xy}{y-x} = 210, \frac{xz}{z-x} = 140, \frac{yz}{y+z} = 140$

a. 105;210;420 b. 100;205;400

c. 95;215;395 d. None of these

Answer Key

1 c	2 a	3 c
4 c	5 d	6 a
7 a	8 a	9 b
10 a		

Word Problems on Equations

Past Year Questions

PYQ May 18

(1) If the sides of an equilateral triangle are shortened by 3 units, 4 units and 5 units respectively and a right triangle is formed then the side of an equilateral triangle is:

a. 6 units b. 7 units

c. 8 units d. 10 units

PYQ June 19

(2) A number consist of two digits such that the digit in one's place in thrice the digit in ten's place. If 36 be added then the digits are reversed. Find the number _____.

a. 62 b. 26

c. 39 d. None of these

PYQ June 22

(3) ☆ If a person has cloth of total 91 cm. If he divides it into 3 parts then longest part is twice the shortest one and another part is 3 cm more than shortest one. What is the shortest one?

a. 25 b. 44

c. 22 d. 46

PYQ Dec 22

(4) If the cost of 3 bags and 4 pens is ₹257 whereas the cost of 4 bags and 3 pens is ₹ 324, then the cost of one bag is:

a. 8 b. 24

c. 32 d. 75

PYQ Jun 23

(5) The largest side of a triangle is 3 times the shortest side and third side is 4 cm shorter then largest side. If the perimeter of the triangle is at least 59 cm, what is the length of shortest side?

a. Less than 7 cm

b. Greater than or equal to 7 cm

c. Less than 9 cm

d. Greater than or equal to 9 cm

PYQ Jun 23

(6) The age of a man is four times the sum of the ages of his two sons and after 10 years, his age will be double the sum of their ages. The present age of the man must be

a. 56 years b. 45 years
c. 60 years d. 64 years

Answer Key

1 c	2 b	3 c
4 d	5 d	6 c

Word Problems on Equations

Mock Test Paper Questions

MTP May 18

(1) A number consists of two digits. The digits in tens place is 3 times the digit in the unit's place. If 54 is subtracted from the digits are reversed. The number is

a. 39 b. 92
c. 93 d. 94

MTP Nov 18

(2) A number consist of three digit of which the middle one is zero and the sum of other digits is 9. The number formed by interchanging the first and third digits is more than the original number by 297 find the number?

a. 306 b. 309
c. 603 d. 307

MTP Nov 18

(3) The age of a person is twice the sum of the ages of his two sons and five years ago his age was thrice the sum of their ages. Find his present age.

a. 60 years b. 52 years
c. 51 years d. 50 years

MTP May 19

(4) Ten years ago the age of a father was four times his son. Ten years hence the age of the father will be twice that of his son. The present age of the father and the son are

a. (50, 20) b. (60, 20)
c. (55, 25) d. none of these

MTP Nov 19

(5) 5 chairs and 3 tables cost of ₹ 350. and 3 Chairs and 5 tables cost ₹ 370. What is the cost of the table and two chairs?

a. ₹ 130 b. ₹ 120
c. ₹ 150 d. ₹ 140

MTP Nov 19

(6) If thrice of A's age 6 years ago be subtracted from twice his present age, the result would be equal to his present age. Find A's Age

a. 9 b. 8
c. 10 d. 12

MTP May 20

(7) A The sum of two numbers is 62 and their product is 960. The sum of their reciprocals is

a. $\frac{31}{480}$ b. $\frac{29}{480}$
c. $\frac{61}{960}$ d. $\frac{41}{960}$

MTP May 20, ICAI SM

(8) Three persons Mr. Roy, Mr. Paul and Mr. Singh together have ₹ 51. Mr. Paul has ₹ 4 less than Mr. Roy and Mr. Singh has got ₹ 5 less than Mr. Roy. They have the money as.

a. (₹ 20, ₹ 16, ₹ 15)
b. (₹ 15, ₹ 20, ₹ 16)
c. (₹ 25, ₹ 11, ₹ 15)
d. none of these

MTP May 20, ICAI SM

(9) The wages of 8 men and 6 boys amount to ₹ 33. If 4 men earn ₹ 4.50 more than 5 boys determine the wages of each man and boy

a. (₹ 1.50, ₹ 3)
b. (₹ 3, ₹ 1.50)
c. (₹ 2.50, ₹ 2)
d. (₹ 2, ₹ 2.50)

MTP Nov 20

(10) The cost of 5 mangoes is equal to the cost of 20 oranges. If the total cost 2 mangoes and 10 oranges is ₹ 22.50, find the cost of two oranges.

a. ₹ 1.25 b. ₹ 2.50
c. ₹ 3 d. ₹ 3.50

MTP Nov 20

(11) A man sells 6 radios and 4 televisions for ₹ 18,480. If 14 radios and 2 televisions are sold for the same amount. What is the price of radio?

a. ₹ 1848 b. ₹ 840
c. ₹ 1680 d. ₹ 3360

Note: No ans is matching with the data of que, correct answer is ₹543.52

MTP Apr 21

(12) On the average an experienced person does 7 units of work while a fresh one work 5 units of work daily but the employer has to maintain an output of atleast 35 units of work per day. The situation can be expressed as:

a. $7x + 5y < 35$
b. $7x + 5y \leq 35$
c. $7x + 5y > 35$
d. $7x + 5y \geq 35$

Note: Shift to Chapter 3

MTP Nov 21

(13) ☆ X and Y have their present ages in the ratio 6:7. 14 years ago, the ratio of the ages of the two was 4:5. What will be the ratio of their ages 21 years from now?

a. 7: 11 b. 9: 10
c. 8: 11 d. 11: 13

MTP Dec 22 – Series I

(14) ☆ A man wants to cut three lengths from a single piece of board of length 91 cm. The Second length is to be 3 cm longer than the shortest and third length is to be twice as the shortest. What is the possible length for the shortest piece?

a. 22 b. 20
c. 15 d. 18

MTP Jun 23 – Series I

(15) If thrice of A's age 6 years ago be subtracted from twice his present age, the result would be equal to his present age. Find A's present age.

a. 7 b. 8
c. 9 d. 6

MTP Jun 23 – Series I

(16) The cost prices of 3 pens and 4 bags is ₹ 324, and 4 pens and 3 bags is ₹ 257, then cost price of 1 pen is equal to

a. ₹ 16 b. ₹ 18
c. ₹ 50 d. ₹ 75

MTP Jun 23 – Series

(17) In a hostel ration stocked for 400 students up 31 days. After 28 days 280 students were vacated the hostel. Find the number of days for which the remaining ration will be sufficient for the remaining students.

a. 5 b. 4
c. 7 d. 10

MTP Jun 23 – Series

(18) The sum of the two numbers is 8 and the sum of their squares is 34. Taking one number as x from an equation in x and hence find the numbers. The numbers are

a. (7, 10) b. (4, 4)
c. (3, 5) d. (2, 6)

MTP Jun 23 – Series I

(19) The value of y of fraction $\frac{x}{y}$ exceeds with x by 5 and if 3 be added to both the fraction becomes $\frac{3}{4}$. Find the fraction,

a. $\frac{12}{17}$ b. $\frac{13}{17}$
c. $-\frac{1}{3}$ d. None of these

MTP Jun 23 – Series I

(20) If difference between a number and its positive square root is 12; the numbers are

a. 9 b. 16
c. 25 d. None of these

Answer Key

1	c	2	a	3	d
4	a	5	a	6	a
7	a	8	a	9	b
10	b	11	b	12	d
13	b	14	a	15	c
16	d	17	d	18	c
19	a	20	b		

Problems on Quadratic Equation

Past Year Questions

PYQ May 18

(1) If $\alpha+\beta=-2$ and $\alpha\beta=-3$, then α, β are the roots of the equation, which is:

a. $x^2-2x-3=0$
b. $x^2+2x-3=0$
c. $x^2+2x+3=0$
d. $x^2-2x+3=0$

PYQ May 18

(2) If α, β are the roots of the equation $x^2+x+5=0$ then $\frac{\alpha^2}{\beta}+\frac{\beta^2}{\alpha}$ is equal to

a. $\frac{16}{5}$ b. 2
c. 3 d. $\frac{14}{5}$

PYQ Nov. 18

(3) Let α and β be the roots of $x^2+7x+12=0$. Then the value of $\left(\frac{\alpha^2}{\beta}+\frac{\beta^2}{\alpha}\right)$ will be:

a. $\frac{7}{12}+\frac{12}{7}$ b. $\frac{49}{144}+\frac{144}{49}$
c. $-\frac{91}{12}$ d. None of these

PYQ Nov. 18

(4) When two roots of quadratic equations are $\alpha, \frac{1}{\alpha}$ then what will be the quadratic equation:

a. $\alpha x^2-(\alpha^2+1)x+\alpha=0$
b. $\alpha x^2-\alpha^2 x+1=0$
c. $\alpha x^2-(\alpha^2+1)x+1=0$
d. None of these

PYQ June 19

(5) Find the condition that one roots is double the other of $ax^2+bx+c=0$

a. $2b^2=3ac$ b. $b^2=3ac$
c. $2b^2=9ac$ d. $2b^2>9ac$

PYQ Nov. 19

(6) Find the value of K in $3x^2-2kx+5=0$ if $x=2$

a. 17/4 b. -7/14
c. 4/17 d. -4/17

PYQ Nov. 20

(7) ☆ The rational root of the equation $0=2p^3-p^2-4p+2$ is:

a. 2 b. -2
c. 1/2 d. -1/2

PYQ Nov. 20

(8) ☆ If $2x^2-(a+6)2x+12a=0$, then the roots are:

a. 6 and a b. 4 and a^2
c. 3 and 2a d. 6 and 3a

PYQ Nov. 20

(9) Solving equation $m+\sqrt{m}=6/25$, the value of m works out to:

a. 1/25 b. 2/25
c. 3/25 d. 1

PYQ Jan. 21

(10) ☆ The value of p for which the difference between the root of equation $x^2+px+8=0$ is 2

a. ± 2 b. ± 4
c. ± 6 d. ± 8

PYQ Jan. 21

(11) ☆ If the quadratic equation $x^2+px+q=0$ and $x^2+qx+p=0$ have a common root then $p+q=?$

a. 0 b. 1
c. -1 d. 2

PYQ Jan. 21

(12) ☆ The harmonic mean of the roots of the equation $(5+\sqrt{2})x^2-(4+\sqrt{5})x+8+2\sqrt{5}=0$ is

a. 2 b. 4
c. 6 d. 8

PYQ July 21

(13) ☆ If α and β are the roots of the equation $2x^2+5x+k=0$, and $4(\alpha^2+\beta^2+\alpha\beta)=23$, then which of the following is true?

a. $k^2+3k-2=0$
b. $k^2-2k+3=0$
c. $k^2-2k-3=0$
d. $k^2-3k+2=0$

PYQ July 21

(14) ☆ The sum of square of any real positive quantity and its reciprocal is never less than:

a. 1 b. 2
c. 3 d. 4

PYQ Dec. 21

(15) If one root is half of the other of a quadratic equation and the difference in roots is a, then the equation is

a. $x^2+ax+2a^2=0$
b. $x^2-3ax-2a=0$
c. $x^2-3ax+2a^2=0$
d. $x^2+3ax-2a^2=0$

PYQ Dec. 21

(16) If the square of a number exceeds twice of the number by 15, then number that satisfies the condition is

a. -5 b. 3
c. 5 d. 15

PYQ June 22

(17) If the second root of the given equation is reciprocal of first root then value of 'K' in the equation $5x^2-13x+k=0$

a. 3 b. 2
c. 1 d. 5

PYQ Dec 22

(18) If the roots of the equation $x^2-px+q=0$ are in the ratio 2: 3, then:

a. $p^2=25q$ b. $p^2=6q$
c. $6p^3=5q$ d. $6p^2=25q$

PYQ Dec 22

(19) What will be the value of k, if the roots of the equation $(k-4)x^2-2kx+(k+5)=0$ are equal?

a. 18 b. 20
c. 19 d. 21

PYQ Jun 23

(20) If α and β are roots of the quadratic equation $x^2-2x-3=0$ then the equation whose roots are $\alpha+\beta$ and $\alpha-\beta$ is:

a. 18 a. 20
c. 19 c. 21

PYQ Jun 23

(21) If α and β are roots of the equation $x^2-(n^2+1)x+\frac{1}{2}(n^4+n^2+1)=0$ then the value of $\alpha^2+\beta^2$ is:

a. $2n$ b. n^2
c. $2n^2$ d. n^3

Answer Key

1	b	2	d	3	c
4	a	5	c	6	a
7	c	8	a	9	a
10	c	11	c	12	b
13	d	14	b	15	c
16	c	17	d	18	d
19	b	20	b	21	b

Problems on Quadratic Equations

Mock Test Paper Questions

MTP May 18

(1) The equation $x^2-(P+4)x+2P+5=0$ has equal roots. The value of p is

a. 2 b. -2
c. ±2 d. 3

MTP May 19

(2) Let α and β be the roots of equation $x^2+7x+12=0$, then the value of $\left(\frac{\alpha^2}{\beta}+\frac{\beta^2}{\alpha}\right)$ will be

a. $\frac{49}{144}+\frac{144}{49}$
b. $\frac{7}{12}+\frac{12}{7}$
c. $\frac{-91}{12}$
d. None of these

Note: Repeat PYQ Nov 18

MTP May 19

(3) When two roots of quadratic equations are α and $\frac{1}{\alpha}$ then what will be quadratic equation.

a. $\alpha x^2-(\alpha^2+1)x+\alpha=0$
b. $\alpha x^2-\alpha^2x+1=0$
c. $\alpha x^2-(\alpha^2+1)x+1=0$
d. None of these

Note: Repeat PYQ Nov 18

MTP May 19 Series II

(4) If α and β be the roots of the equation $2x^2-4x-3=0$ the value of $\alpha^2+\beta^2$ is

a. 5 b. 7
c. 3 d. -4

MTP May 19 Series II

(5) If one root of the equation $x^2+7x+p=0$ be reciprocal of the other, then the value of p is_____.

a. 1 b. -1
c. 7 d. -7

MTP Nov 19

(6) If one root of the quadratic equation is $2+\sqrt{3}$, the equation is ____.

a. x^2-4x+1 b. x^2+4x+1
c. x^2-4x-1 d. None of these

MTP May 20

(7) The roots of the quadratic equation $x^2-4x+k=0$ are coincident if

a. $k=4$ b. $k=3$
c. $k=2$ d. $k=1$

MTP May 20

(8) The roots of the equation $x^2+(2p-1)x+p^2=0$ are real if.

a. $p \geq 1$ b. $p \leq 4$
c. $p \geq 1/4$ d. $p \leq 1/4$

Note: Type in MTP

MTP Nov 20

(9) The roots of the quadratic equation $9x^2+3kx+4=0$ are equal if

a. $k=\pm 2$
b. $k=\pm 3$
c. $k=\pm 4$
d. $k=\pm 5$

MTP Nov 20

(10) If one root of a equation is $2+\sqrt{5}$, then the quadratic equation is

a. $x^2+4x-1=0$
b. $x^2-4x-1=0$
c. $x^2+4x+1=0$
d. $x^2-4x+1=0$

MTP March 21

(11) If one root of the equation $x^2-3x+k=0$ is 2, then the value of k will be

a. -10 b. 0
c. 2 d. 10

MTP March 21

(12) ☆ If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is _____

a. $x^2-16x-25=0$ b. $x^2-16x+25=0$
c. $x^2+16x+25=0$ d. None of these

MTP Apr 21

(13) Roots of the equation $3x^2-14x+k=0$ will be reciprocal of each other if:

a. $k=-3$ b. $k=0$
c. $k=3$ d. $k=14$

MTP Apr 21

(14) If one root of the equation $x^2-3x+k=0$ is 2, then the value of k will be

a. -10 b. 0
c. 2 d. 10

Note: Repeat Que 11 MTP Mar 21

MTP Apr 21

(15) If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is

a. $x^2-16x-25=0$ b. $x^2-16x+25=0$
c. $x^2+16x+25=0$ d. None of these

Note: Repeat Que 12 MTP Mar 21

MTP Nov 21

(16) ☆ The equation $3x^2+mx+n=0$ has roots that are double that of the equation $x^2+10x+12=0$. What is the value of $m+n$?

a. 104 b. 204
c. 102 d. 202

MTP Nov 21

(17) If α and β are the roots of the equation $x^2+7x+12=0$, then the equation whose roots $(\alpha+\beta)^2$ and $(\alpha-\beta)^2$ will be

a. $x^2-14x+49=0$
b. $x^2-24x+144=0$
c. $x^2-50x+49=0$
d. $x^2-19x+49=0$

MTP Oct 21

(18) Given the Quadratic Equation $\frac{x+1}{x}-\frac{x}{x+1}=\frac{3}{2}$

a. 1 and -2/3 b. -1 and 2/3
c. -1 and -2/3 d. 1 and 2/3

Note: Ans wrong in MTP, Correct Ans is **Option a**

MTP Oct 21

(19) The roots of equation $9^{x+2}-6.3^{x+1}+1=0$ are

a. -2 b. 2
c. $\sqrt{2}$ d. 0

MTP Oct 21

(20) The roots of the equation $x^2 - x + 1 = 0$ are

a. Imaginary and unequal
b. Real and unequal
c. Real and equal
d. Imaginary and equal

MTP Oct 21

(21) If one root of the quadratic equation is $2 + \sqrt{3}$ the equation is _____

a. $x^2 - 4x + 1 = 0$ b. $x^2 + 4x + 1 = 0$
c. $x^2 - 4x - 1 = 0$ d. None of these

MTP Mar 22

(22) If α and β are the roots of the equation $x^2 + 7x + 12 = 0$, then the equation whose roots $(\alpha + \beta)^2$ and $(\alpha - \beta)^2$ will be:

a. $x^2 - 14x + 49 = 0$
b. $x^2 - 24x + 144 = 0$
c. $x^2 - 50x + 49 = 0$
d. $x^2 - 19x + 144 = 0$

Note: Repeat - Q17 MTP Nov 21

MTP March 22

(23) Roots of the equation $2x^2 + 3x + 7 = 0$ are α and β then the value of $\alpha\beta^{-1} + \beta\alpha^{-1}$ is

a. 2 b. 3/7
c. 7/2 d. -19/14

MTP June 22

(24) If the ratio of the roots of the equation $4x^2 - 6x + p = 0$ is 1: 2 then the value of p is:

a. 1 b. 2
c. -2 d. -1

Note: MTP Ans is wrong, Correct Option is b

MTP June 22

(25) ☆ If roots of equation $x^2 + x + r = 0$ are α and β and $\alpha^3 + \beta^3 = -6$. Find the value of 'r'

a. -5/3 b. 7/3
c. -4/3 d. 1

MTP Dec 22 – Series I

(26) If one root is $5z^2 + 13z + y$ is 0 be reciprocal of the other, then the value of y is

a. $\frac{1}{5}$ b. $-\frac{1}{5}$
c. 5 d. -5

MTP Dec 22 Series II

(27) Find value of $x^2 - 10x + 1$, if $x = \frac{1}{5 - 2\sqrt{6}}$

a. 25 b. 1
c. 0 d. 49

MTP Dec 22 Series II

(28) Find the value of k in $3x^2 - 2kx + 5 = 0$, if $x = 2$.

a. 17/4 b. -7/14
c. 4/17 d. - 4/17

MTP Jun 23 Series I

(29) If one root of the quadratic equation is from the equation given that the roots are irrational. Then find the Quadratic equation.

a. $x^2 - 4x + 1 = 0$ b. $x^2 + 4x - 1 = 0$
c. $x^2 - 4x - 1 = 0$ d. $x^2 + 4x + 1 = 0$

MTP Jun 23 Series I

(30) If the roots of $(k-4)x^2 - 2kx + (k+5) = 0$ are coincident. Then the value of K?

a. 14 b. 20
c. 18 d. 22

Answer Key

1	c	2	c	3	a
4	b	5	a	6	a
7	a	8	d	9	c
10	b	11	c	12	b
13	c	14	c	15	b
16	b	17	c	18	b
19	a	20	a	21	a
22	c	23	d	24	a
25	a	26	c	27	c
28	a	29	a	30	b

Problems on Cubic Equations

Past Year Questions

PYQ Nov. 19

(1) Roots of the equation $x^3 + 9x^2 - x - 9 = 0$.

a. 1, 2, 3 b. 1, -1, -9
c. 2, 3, -9 d. 1, 3, 9

PYQ July 21

(2) The value of 'k' is _____, if 2 is the root of the following cubic equation: $x^3 - (k+1)x + k = 0$

a. 2 b. 6
c. 1 d. 4

PYQ Dec. 21

(3) Solve $x^3 - 7x + 6 = 0$

a. $x = 6, 7, -4$ b. $x = -1, -2, -3$

c. $x = 1, 2, -3$ d. $x = 2, 4, 6$

Answer Key

1 b 2 b 3 c

Problems on Cubic Equations

Mock Test Paper Questions

MTP Nov 18

(1) if α, β, γ are the roots of equation $x^3 - 4x^2 + x + 6 = 0$ then the equation having roots are $\frac{1}{\alpha}, \frac{1}{\beta}, \frac{1}{\gamma}$ is

a. $x^3 - 4x^2 + x + 6 = 0$

b. $4x^3 - 6x^2 + x - 1 = 0$

c. $6x^3 + x^2 - 4x + 1 = 0$

d. $6x^3 - x^2 + 4x - 1 = 0$

Note: Out of syllabus – you can leave this.

MTP May 19

(2) If $x = 5^{1/3} + 5^{-1/3}$, then $5x^3 - 15x$ is given by

a. 25 b. 26

c. 27 d. 30

MTP Nov 21

(3) $(x + 4)$ is a factor of $x^4 + 4x^3 - ax^2 - bx + 24$.

☆ Also, $a + b = 29$. Find the value of b.

a. 7 b. 16

c. 22 d. 13

MTP Dec 22 Series II

(4) Roots of the equation $x^3 + 9x^2 - x - 9 = 0$.

a. 1, 2, 3 b. 1, - 1, - 9

c. 2, 3, - 9 d. 1, 3, 9

Answer Key

1 c 2 b 3 c

4 b

Chapter 3: Linear Inequalities

Linear Inequalities

Past Year Questions

PYQ May 18

(1) The linear relationship between two variables in an inequality:

a. $ax + by \le c$

b. $ax.by \le c$

c. $axy + by \le c$

d. $ax + bxy \le c$

PYQ Nov. 18

(2) On solving the inequalities $5x + y \le 100, x + y \le 60, x \ge 0, y \ge 0$, we get the following solution:

a. (0, 0), (20, 0), (10, 50) & (0, 60)

b. (0, 0), (60, 0), (10, 50) & (0, 60)

c. (0, 0), (20, 0), (0, 100) & (10, 50)

d. None of these

PYQ June 19

(3) An employer recruits experienced (x) and fresh workmen (y) for his under the condition that he cannot employ more than 11 people. x and y can related by the inequality.

a. $x + y \ne 11$

b. $x + y \le 11, x \ge 0, y \ge 0$

c. $x + y \ge 11, x \ge 0, y \ge 0$

d. None of these

PYQ June 19

(4) The solution set of the equations $x + 2 > 0$ and $2x - 6 > 0$ is

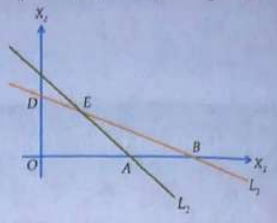
a. $(-2, \infty)$ b. $(3, \infty)$

c. $(-\infty, -2)$ d. $(-\infty, -3)$

PYQ June 19

(5) The common region represented by the following in equalities

$L_1 = X_1 + X_2 < 4; L_2 = 2X_1 + X_2 > 6$



a. ΔABC

b. Outside of OAB

c. ΔBCE

d. ΔABE

PYQ Nov. 19

(6) $6x + y \ge 18, x + 4y \ge 12, 2x + y \ge 10$

On solving the inequalities; we get

a. (0, 18), (12, 0), (4, 2), & (7, 6)

b. (3, 0), (0, 3), (4, 2), & (7, 6)

c. (5, 0), (0, 10), (4, 2), & (7, 6)

d. (0, 18), (12, 0), (4, 2), (0, 0), & (7, 6)

PYQ Nov. 20

(7) Solve for x of the inequalities

☆ $2 \le \frac{3x-2}{5} \le 4$ where $x \leftarrow N$

a. $\{5,6,7\}$

b. $\{3,4,5,6\}$

c. $\{4,5,6\}$

d. None of these

PYQ Jan. 21

(8) The common region in the graph of the inequalities $x + y \le 4, x - y \le 4, x \ge 2$ is

☆

a. Equilateral triangle

b. Isosceles triangle

c. Quadrilateral

d. Square

PYQ Dec. 21

(9) XYZ Company has a policy for its recruitment as: it should not recruit more than eight men (x) to three women (y). How can this fact be expressed in inequality?

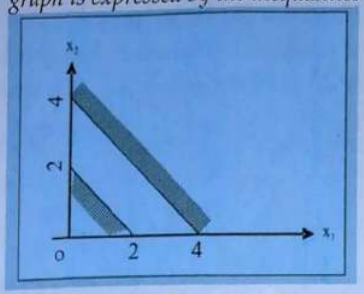
☆

a. $3y \ge 8x$ b. $3y \le x / 8$

c. $8y \ge 3x$ d. $8y \le 3x$

PYQ Dec. 21

(10) The region indicated by the shading in the graph is expressed by the inequalities



a. $x_1 + x_2 \le 2; x_1 + x_2 \ge 4; x_1 \ge 0, x_2 \ge 0$

b. $x_1 + x_2 \le 2; x_2 x_1 + x_2 \le 4; x_1 \ge 0, x_2 \ge 0$

c. $x_1 + x_2 \ge 2; x_1 + x_2 \ge 4; x_1 \ge 0, x_2 \ge 0$

d. $x_1 + x_2 \le 2; x_1 + x_2 \ge 4; x_1 \ge 0, x_2 \ge 0$

PYQ Dec 22

(11) If $2x + 5 > 3x + 2$ and $2x - 3 \le 4x - 5$, the 'x' can take which of the following value?

☆ a. 4 b. - 4

c. 2 d. - 2

PYQ Jun 23

(12) In a garment factory, an average experienced tailor can stich 5 shirts while a fresh tailor can stitch 3 shirts daily, but the employer has to maintain an output of at least 30 shirts stitched per day. This can be formulated as

a. $5x + 3y \le 30$

b. $5x + 3y > 30$

c. $5x + 3y \ge 30, x \ge 0, y \ge 0$

d. $5x + 3y \le 30, x \ge 0, y \ge 0$

PYQ Jun 23

(13) A fertilizer company produces two types of fertilizers called grade I and grade II. Each of these types is processed through a critical chemical plant unit. The plant has maximum of 180 hours available in a week. Manufacturing one bag of grade I fertilizer requires 4 hours in the plant. Manufacturing one bag of grade II fertilizer requires 10 hours in the plant. Express this using linear inequalities.

a. $2x_1 + 5x_2 \le 180$

b. $4x_1 + 10x_2 > 180$

c. $2x_1 + 5x_2 > 180$

d. $4x_1 + 10x_2 \le 180$

Answer Key

1	a	2	a	3	b
4	b	5	d	6	a
7	d	8	b	9	c
10	a	11	c	12	c
13	d				

Linear Inequalities

Mock Test Paper Questions

MTP May 18

(1) A manufacturer produces two items A and B. He has ₹10,000 to invest and a space to store 100 items. A table costs him ₹400 and a chair ₹100. Express this in the form of linear inequalities

a. $x + y \le 100, 4x + y \le 100, x \ge 0, y \ge 0$

b. $x + y \le 1000, 2x + 5y < 100, x \ge 0, y \ge 0$

c. $x + y > 100, 4x + y \ge 100, x \ge 0, y \ge 0$

d. none of these

MTP Nov 18

(2) The Solution of the in equality $8x + 6 < 12x + 14$ is

a. (-2,2) b. (0, -2)

c. (2, ∞) d. (-2, ∞)

MTP Nov 18

(3) The rules and representations demand that employed should employ not more than 8 experienced leads to 1 fresh one and then fact can be expressed as

a. $y \ge x/8$ b. $8y \le x$

c. $8y = x$ d. $y = 8x$

MTP Nov 18

(4) On the average experienced person does 6 units work while A person 2 units of work daily but employer has to maintain as output of at least 24 units of per day. This situation can be expressed as

a. $6x + 2y \le 24$ b. $6x + 2y = 24$

c. $6x + 2y \ge 24$ d. $6x + 2y \ne 4$

MTP May 19

(5) On solving the inequalities $5x + y \le 100$, $x + y \le 60$, $x \ge 0$ and $y \ge 0$, we get the following situation

a. (0, 0), (20, 0), (10, 50) and (0,60)
b. (0, 0), (60, 0), (10, 50) and (0,60)
c. (0, 0), (20, 0), (0, 100) and (10,50)
d. none of these

Note: Repeat

MTP May 19 Series II

(6) Mr. A plans to invest up to ₹ 30,000 in two stocks X and Y. Stock X(x) is priced at ₹ 175 and Stock Y(y) at ₹ 95 per share. This can be shown by

a. $175x+95y < 30,000$
b. $175x+95y > 30,000$
c. $175x+95y = 30,000$
d. None of these

MTP Nov 19

(7) A company produces two products A and B, each of which requires processing in two machines. The first machine can be used at most for 60 hours, the second machine can be used at most for 40 hours. The product A requires 2 hours on machine one and one hour on machine two. The product B requires one hour on machine one and two hours on machine two. Express above situation using linear inequalities

a. $2x+y \le 60$ and $x+y \ge 40$
b. $2x+y \ge 60$ and $x+y \ge 40$
c. $2x+y \le 60$ and $x+y \le 40$
d. $2x+y \ge 60$ and $x+y \le 40$

MTP Nov 19

(8) The solution set of the inequation $x+2 > 0$ and $2x-6 > 0$ is

a. $(-2,\infty)$ b. $(3,\infty)$
c. $(-\infty,2)$ d. $(-\infty,-2)$

Note: Repeat

MTP May 20, ICAI SM

(9) On solving the inequalities $2x + 5y \le 20$, $3x + 2y \le 12$, $x \le 0$, $y \le 0$, we get the following situation

a. (0, 0), (0, 4), (4, 0) and (20/11, 36/11)
b. (0, 0), (10, 0), (0, 6) and (20/11,36/11)
c. (0, 0), (0, 4), (4, 0) and (2, 3)
d. (0, 0), (10, 0), (0, 6) and (2, 3)

MTP May 20

(10) On the average experienced person does 5 units of work while a fresh one 3 units of work daily but the employer has to maintain an output of at least 30 units of work per day. This situation can be expressed as,

a. $5x + 3y \le 30$
b. $5x + 3y > 30$
c. $5x + 3y \ge 30$ $x \ge 0$, $y \ge 0$
d. none of these

MTP Nov 20

(11) The solution set of the equations $x+2 > 0$ and $2x-6 > 0$ is

a. $(-2, \infty)$ b. $(3, \infty)$
c. $(-\infty, -2)$ d. $(-\infty, -3)$

Note: Repeat

MTP Nov 20

(12) The solution space of the inequalities $2x + y \le 10$ and $x-y \le 5$:

☆ (i) includes origin
(ii) includes the point (4,3)

Which one is correct?

a. Only (i)
b. Only (ii)
c. Both (i) and (ii)
d. None of these

MTP March 21

(13) The solution of the inequality $\frac{(5-2x)}{3} \le \frac{x}{6} - 5$ is

a. $x \ge 8$ b. $x \le 8$
c. $x = 8$ d. None of these

MTP March 21

(14) On the average, experienced person does 5 units of work while a fresh one 3 units work daily but the employer have to maintain the output of at least 30 units of work per day. The situation can be expressed as.

a. $5x+3y \le 30$ b. $5x+3y \ge 30$
c. $5x+3y = 30$ d. None of these

MTP Apr 21

(15) Solution space of the inequalities $2x + y \le 10$ and $x-y \le 5$:

(i). Includes the origin
(ii). Includes the point (4,3)

Which one is correct?

a. Only (i) b. Only (ii)
c. Both (i) and (ii) d. None of above

MTP Nov 21

(16) What is the smallest integral value of n for which $n^3 + 7n^2 - 50n - 336 > 0$

☆ a. 8 b. 6
c. 7 d. None of these

Note: Correct ans is 4 (check by putting n as 1, 2, 3, 4)

MTP Nov 21

(17) On the average, experienced person does 5 units of work while a fresh one 3 units of work daily, but the employer have to maintain the output at least 30 units of work per day. The situation can be expressed as

a. $5x + 3y \le 30$ b. $5x + 3y \ge 30$
c. $5x + 3y = 30$ d. None of these

Note: Repeat

MTP Oct 21

(18) A dealer has only ₹ 5760 to invest in fans (x) and sewing machines (y). The cost per unit of fan and sewing machine is ₹ 360 and ₹ 240 respectively. This can be shown by:

a. $360x + 240y \ge 5760$
b. $360x + 240y \le 5760$
c. $360x + 240y = 5760$
d. none of these

MTP March 22

(19) On solving the inequalities $5x + y \le 100$, $x + y \le 60$, $x \ge 0$, $y \ge 0$, we get the following situation:

a. (0,0), (20,0), (10,50), & (0,60)
b. (0,0), (60,0), (10,50), & (0,60)
c. (0,0), (20,0), (0,100) & (10,50)
d. none of these

Note: Repeat

MTP March 22

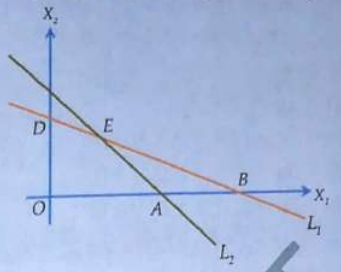
(20) The rules and regulations demand that the employer should employ not more than 5 experienced hands to 1 fresh one and this fact is represented by (Taking experienced person as x and fresh person as y)

a. $y \ge \frac{x}{5}$ b. $5y \le x$
c. $5y \ge x$ d. none of these

MTP June 22

(21) The common region represented by the following in equalities

$L_1 = X_1 + X_2 < 4; L_2 = 2X_1 + X_2 > 6$



a. ΔABC b. outside of OAB
c. ΔBCE d. ΔABE

Note: Repeat

MTP June 22

(22) An employer recruits experienced (x) and fresh workmen(y) for his under the condition that he cannot employ more than 11 people and y can be related by the inequality.

a. $x+y \ne 11$
b. $x+y \le 11, x \ge 0, y \ge 0$
c. $x+y \ge 11, x \ge 0, y \ge 0$
d. none of these

MTP June 22

(23) $6x + y \ge 18$, $x + 4y \ge 12$, $2x + y \ge 10$ On solving the inequalities; we get:

a. (0, 18), (12, 0), (4, 2) & (7, 6)
b. (3, 0), (0, 3), (4, 2) & (7, 6)
c. (5, 0), (0, 10), (4, 2) & (7, 6)
d. (0, 18), (12, 0), (4, 2), (0, 0) & (7, 6)

Note: Repeat PYQ Nov 19

MTP Dec 22 – Series I

(24) A Labour can be paid under two methods given below :

☆ (i) ₹ 600 fixed and ₹ 50 per hour
(ii) ₹ 170 per hour
If a labour job work takes 'r' hours to complete, find out the value of r for which the method (ii) gives the labour gets the better wages.

a. $x = 6$ b. $x = 4$
c. $x = 3$ d. $x = 2$

MTP Dec 22 – Series I

(25) *The time required to produce a unit of product A is 3 hours and that for product B is 5 hours. The total available time is 220 hours. If x and y are the number of units of A and B that are produced then*

a. $3x + 2y = 220$

b. $3x + 5y \geq 220, x \geq 0, y \geq 0$

c. $3x + 5y \leq 220, x \geq 0, y \geq 0$

d. $5x + 2y \geq 220, x \geq 0, y \geq 0$

MTP Dec 22 – Series II

(26) $6x + y \geq 18, x + 4y \geq 12, 2x + y \geq 10$, *On solving the inequalities; we get:*

a. (0, 18), (12, 0), (4, 2), (7, 6)

b. (3, 0), (0, 3), (4, 2), (7, 6)

c. (5, 0), (0, 10), (4, 2), (7, 6)

d. (0, 18), (12, 0), (4, 2), (0, 0), (7, 6)

Note: Repeat

MTP Jun 23 – Series I

(27) *If* $3x + 2 < 2x + 5$ *and* $4x - 5 \geq 2x - 3$, *then x can take from the following values*

a. 3

b. -1

c. 2

d. -3

MTP Jun 23 – Series I

(28) *On solving the inequalities* $6x + y > 18, x + 4y > 12, 2x + y > 10$, *we get the following situation:*

a. (0, 18), (12, 0), (4, 2) & (7, 6)

b. (3, 0), (0, 3), (4, 2) & (7, 6)

c. (5, 0), (0, 10), (4, 2) & (7, 6)

d. (0, 18), (12, 0), (4, 2), (0, 0) & (7, 6)

Answer Key

1 a	2 d	3 a
4 c	5 a	6 a
7 c	8 b	9 a
10 c	11 b	12 a
13 a	14 b	15 a
16 d	17 b	18 b
19 a	20 a	21 d
22 b	23 a	24 a
25 c	26 a	27 c
28 a		

Chapter 4 – Time Value of Money

Simple Interest and Compound Interest

Past Year Questions

PYQ May 18

(1) If ₹ 1,000 be invested at interest rate of 5% and the interest be added to the principal every 10 years, then the number of years in which it will amount to ₹ 2,000 is:

★

a. $16\frac{2}{3}$ years b. $6\frac{1}{4}$ years

c. 16 years d. $6\frac{2}{3}$ years

PYQ May 18

(2) A person borrows ₹ 5,000 for 2 years at 4% per annual simple interest. He immediately leads to another person at $6\frac{1}{4}$ % per annum for 2 years find his gain in the transaction for year:

a. ₹ 112.50 b. ₹ 225

c. ₹ 125 d. ₹ 107.50

PYQ May 18

(3) If an amount is kept at S I. it earns an interest of ₹ 600 in first two years but when kept at compound interest it earns an interest of ₹ 660 for the same period, then the rate of interest and principal amount respectively are:

a. 20%, ₹ 1,200 b. 20%, ₹ 1,500

c. 10%, ₹ 1,200 d. 10%, ₹ 1,500

PYQ Nov. 18

(4) If ₹ 10,000 is invested at 8% per year compounded quarterly, then the value of the investment after 2 years is:

(Given $(1+0.02)^8 = 1.171659$)

a. ₹ 11,716.59 b. ₹ 10,716.59

c. ₹ 117.1659 d. None of these

PYQ Nov. 18

(5) A bank pays 10% rate of interest compounded annually. A sum of ₹ 400 is deposited in the bank. The amount at the end if 1 year will be

a. ₹ 440 b. ₹ 439

c. ₹ 441 d. ₹ 442

PYQ Nov. 18

(6) A certain amount of money doubles itself in 10 years when deposited on simple interest. It would triple itself in

a. 20 years b. 15 years

c. 25 years d. 30 years

PYQ Nov. 18

(7) A man deposited ₹ 8,000 in a bank for 3 years at 5% per annum compound interest, after 3 years he will get

a. ₹ 8,800 b. ₹ 9,261

c. ₹ 9,200 d. ₹ 9,000

PYQ Nov. 18

(8) If in two years' time a principal of ₹ 100 amounts to ₹ 121 when the interest at the rate of r % is compounded annually, then the value of r will be

a. 10.5% b. 10%

c. 15% d. 14%

PYQ Nov. 18

(9) A certain sum of money Q was deposited for 5 years and 4 months at 4.5% simple interest and amounted to ₹ 248, then the value of Q is

a. ₹ 200 b. ₹ 210

c. ₹ 220 d. ₹ 240

PYQ Nov. 18

(10) If compound interest on a sum for 2 years at 4% per annum is ₹ 102, then the simple interest on the same sum for the same period at the same rate will be

a. ₹ 99 b. ₹ 101

c. ₹ 100 d. ₹ 95

PYQ Nov. 18

(11) If the difference between the compound interest compounded annually and simple interest on a certain amount at 10% per annum for two years is ₹ 372, then the principal amount is

a. ₹ 37,200 b. ₹ 37,000

c. ₹ 37,500 d. None of these

Repeat Jan 21 - PYQ Nov. 18

(12) The effective rate of interest for one year deposit corresponding to a nominal 7% rate of interest per annum convertible quarterly is

a. 7% b. 7.5%

c. 7.4% d. 7.18%

PYQ Nov. 18

(13) How much will ₹ 25,000 amount to in 2 years at compound interest if the rates for the successive years are 4% and 5% per year

a. ₹ 27,300 b. ₹ 27,000
c. ₹ 27,500 d. ₹ 27,900

PYQ Nov. 18

(14) ₹ 8,000/- at 10% per annum interest compounded half yearly will become at the end of one year

a. ₹ 8,800 b. ₹ 8,820
c. ₹ 8,900 d. ₹ 9,600

PYQ June 19

(15) The certain sum of money became ₹ 692/- in 2 years and ₹ 800/- in 5 years then the principal amount is _____

a. ₹ 520 b. ₹ 620
c. ₹ 720 d. ₹ 820

PYQ June 19

(16) A sum of money amount to ₹ 6,200 in 2 years and ₹ 7,400 in 3 years as per S.I. then the principal is

a. ₹ 3,000 b. ₹ 3,500
c. ₹ 3,800 d. None of these

PYQ June 19

(17) A sum was invested for 3 years as per C.I. and the rate of interest for first year is 9%, 2nd year is 6% and 3rd year is 3% p.a. respectively. Find the sum if the amount in three years is ₹ 550?

a. ₹ 250 b. ₹ 300
c. ₹ 462.16 d. ₹ 350

PYQ June 19

(18) $P = ₹ 5,000\ R = 15\%\ T = 4\frac{1}{2}\ y$ using $I = \frac{PTR}{100}$ then I will be

a. ₹ 3,375 b. ₹ 3,300
c. ₹ 3,735 d. None o these

PYQ June 19

9) The effective rate of interest does not depend upon

a. Amount of Principal
b. Amount of Interest
c. Number of Conversion Periods
d. None of these

PYQ June 19

If $P\ i^2 = ₹ 96$, and R = 8% compounded annually then P =

a. ₹ 14,000 b. ₹ 15,000
c. ₹ 16,000 d. ₹ 17,000

PYQ June

(21) In simple interest if the principal is ₹ 2,000 and the rate and time are the roots of the equation $x^2 - 11x + 30 = 0$ then simple interest is

a. ₹ 500 b. ₹ 600
c. ₹ 700 d. ₹ 800

PYQ Nov.

(22) A man invests ₹ 12,000 at 10% p.a. and another sum of money at 20% p.a. for one year ☆ The total investment earns at 14% p.a. simple interest the total investment is:

a. ₹ 8,000 b. ₹ 20,000
c. ₹ 14,000 d. ₹ 16,000

PYQ Nov.

(23) The difference in simple interest of a sum invested of ₹ 1,500 for 3 years is ₹ 18. The difference in their rates is:

a. 0.4 b. 0.6
c. 0.8 d. 0.10

PYQ Nov.

(24) Find the effective rate of interest on ₹ 10,000 on which interest is payable half yearly at 5% p.a.

a. 5.06% b. 4%
c. 0.4% d. 3%

PYQ Nov.

(25) Find the effective rate of interest at 10% p.a. when interest is payable quarterly

a. 10.38% b. 5%
c. 5.04% d. 4%

PYQ Nov.

(26) What will be the population after 3 years when present population is ₹ 25,000 and population increases at the rate of 3% in 1 year, at 4% in 2nd year and 5% in 3rd year?

a. ₹ 28,119 b. ₹ 29,118
c. ₹ 27,000 d. ₹ 30,000

PYQ Nov.

(27) The value of scooter is ₹ 10,000 find its value after 7 years if rate of depreciation is 10% p.a.

a. ₹ 4,782.96 b. ₹ 4,278.69
c. ₹ 42,079 d. ₹ 42,000

PYQ Nov.

(28) SI = 0.125P at 10% p.a. Find time.

a. 1.25 years b. 25 years
c. 0.25 years d. None of these

PYQ Nov. 19

(29) Scrap value of a machine valued at ₹ 10,00,000, after 10 years within depreciation at 10% p.a.:
a. ₹ 3,48,678.44 b. ₹ 3,84,679.45
c. ₹ 4,00,000 d. ₹ 3,00,000

PYQ Nov. 19

(30) The difference between CI and SI for 2 years, is 21. If rate of interest is 5% find principal
a. ₹ 8,400 b. ₹ 4,800
c. ₹ 8,000 d. ₹ 8,200

PYQ Nov. 20

(31) On what sum will the compound interest at 5% per annum for 2 years compounded annually be ₹ 3,280.
a. ₹ 32,000 b. ₹ 16,000
c. ₹ 48,000 d. ₹ 64,000

PYQ Nov. 20

(32) An amount P becomes ₹ 5,100.5 and ₹ 5,203 after second and fourth years respectively at 1% of interest per annum compounded annually. Thus value of P and R are:
a. ₹ 4,000 and 1.5 b. ₹ 5,000 and 1
c. ₹ 6,000 and 2 d. ₹ 5,500 and 3

PYQ Nov. 20

(33) A certain sum invested at 4% per annum compounded semi-annually amounts to ₹ 1,20,000 at the end of one year. Find the sum:
a. 1,15,340 b. 1,10,120
c. 1,12,812 d. 1,13,113

Repeat Jan 21 - PYQ Nov. 20

(34) Find the compound interest if an amount of ₹ 50,000 is deposited in bank for one year at the rate of 8% per annum compounded semi-annually.
a. ₹ 3,080 b. ₹ 4,080
c. ₹ 5,456 d. ₹ 7,856

PYQ Nov. 20

(35) ☆ An amount is lent at a nominal rate of 4.5% per annum compounded quarterly. What would be the gain in rupees over when compounded annually?
a. 0.56 b. 0.45
c. 0.076 d. 0.85

PYQ Nov. 20

(36) What sum of money will produce ₹ 42,800 as an interest in 3 years and 3 months at 2.5% p.a. simple interest?
a. ₹ 3,78,000 b. ₹ 5,26,769
c. ₹ 4,22.000 d. ₹ 2,24.000

PYQ Nov. 20

(37) ☆ The ratio of principal and the compound interest value for three years (compounded annually) is 216 : 127. The rate of interest is:
a. 0.1777 b. 0.1567
c. 0.1666 d. 0.1587

Repeat Q34 | PYQ Jan. 21

(38) A certain sum amounted to ₹ 575 at 5% in a time in which ₹ 750 amounted to ₹ 840 at 4%. If the rate of interest is simple, find the sum-
a. 525 b. 550
c. 515 d. 500

PYQ Jan. 21

(39) Find the amount of compounded interest, if an amount of ₹ 50,000 is deposited in a bank for one year at the rate of 8% per annum compounded semiannually
a. 3,080 b. 4,080
c. 5,456 d. 7,856

PYQ Jan. 21

(40) The population of a town increase by 2% of the population at the beginning of the year. The number of year by which the total increases in population would be 40% is:
a. 7 years
b. 10 years
c. 17 years
d. 19 years (approx.)

PYQ Jan. 21

(41) ☆ Two equal amounts of money an deposited in two banks each at 15% p.a. fix 3.5 year in the bank and fix 5 years in the either. The difference between the interest amount from the bank in ₹ 144. Find the sum
a. ₹ 620 b. ₹ 640
c. ₹ 820 d. ₹ 840

PYQ Jan. 21

(42) The simple interest on sum at 4% p.a. for 2 years is ₹ 80. Find the CI on the same sum for the same period.
a. ₹ 81.60 b. ₹ 80.80
c. ₹ 83.20 d. ₹ 82.30

PYQ Jan. 21

(43) Which is a better investment 9% p.a. compounded quarterly or 9.1% p.a. simple interest?

a. 9% compounded
b. 9.1% S.T.
c. Both are same
d. Cannot be said

Repeat Q12 | PYQ Jan. 21

(44) The effective rate of interest corresponding to a nominal rate of 7% p.a. compounded quarterly is

a. 7.5% b. 7.6%
c. 7.7% d. 7.18%

PYQ Jan. 21

(45) A man invested one-third of his capital at 7% one fourth at 8% and the remainder at 10%. If ☆ the annual income is ₹ 561. The capital is -

a. ₹ 4,400 b. ₹ 5,500
c. ₹ 6,600 d. ₹ 5,800

PYQ Jan. 21

(46) A sum of money is lent at C.I. rate 20% p.a. 2 years. It would fetch ₹ 482 more if the interest is compounded half yearly. The sum is:

a. ₹ 19,800 b. ₹ 19,900
c. ₹ 20,000 d. ₹ 20,100

PYQ Jan. 21

(47) What 'I' denote the actual rate of interest in decimal, and n denote the number of conversion periods, the formula for computing the effective rate of interest E is given by.

a. $(1+i)^n$ b. $(1+i)^n - 1$
c. $1-(1+i)^n$ d. $(1+i)^{-n}$

PYQ July 21

(48) The effective rate of return for 24% per annum convertible monthly is given as:

a. 24% b. 26.82%
c. 18% d. 24.24%

PYQ July 21

(49) What is the compound interest (in ₹) on a sum of ₹ 12,600 for $1\frac{1}{2}$ years at 20% per annum if the interest is compounded half yearly? (Nearest to a rupee)

a. 4,271 b. 4,171
c. 4,711 d. 4,117

PYQ July 21

(50) A sum of ₹ 7,500 amounts to ₹ 9,075 at 10% p.a., interest being compounded yearly in a ☆ certain time. The simple interest (in ₹) on the same sum for the same time and the same rate is:

a. 1,000 b. 1,250
c. 1,800 d. 1,500

PYQ July 21

(51) A certain sum amounts to ₹ 15,748 in 3 years at simple interest at r% p.a. The same sum amounts to ₹ 16,510 at (r + 2) % p.a. simple interest in the same time. What is the value of r?

a. 10% b. 8%
c. 12% d. 6%

PYQ July 21

(52) What is the difference (in ₹) between the simple interest and the compound interest on a sum of ₹ 8,000 for $2\frac{2}{5}$ years at the rate of 10% p.a. when the interest is compounded yearly?

a. 136.12 b. 129.50
c. 151.75 d. 147.20

PYQ July 21

(53) A sum of ₹ x amounts to ₹ 27,900 in 3 years and to ₹ 41,850 in 6 years at a certain rate percent per annum, when the interest is compounded yearly. The value of x is:

a. 16,080 b. 18,600
c. 18,060 d. 16,800

PYQ Dec. 21

(54) Rahul invested ₹ 70,000 in a bank at the rate of 6.5% p.a. simple interest rate. He received ₹ 85,925 after the end of term. Find out the period for which sum was invested by Rahul.

a. 2 years b. 3 years
c. 3.5 years d. 2.5 years

PYQ Dec. 21

(55) A company needs ₹ 10,000 in five years to replace as equipment. How much (in ₹) should be invested now at an interest rate of 8% p.a. is order to provide for this equipment?

a. 6,000 b. 6,805
c. 10,000 d. 11,000

PYQ Dec. 21

(56) R needs money to pay ₹ 5,00,000 in 10 years. He invested a sum in a scheme at 9% rate of interest compounded half-yearly. How much amount (in ₹) he invested?
$(1.046^{20} = 2.41171)$
a. 3,07,321 b. 2,70,321
c. 2,07,321 d. 3,40,321

PYQ Dec. 21

(57) An amount is lent at R% simple interest for R years and the simple interest amount was one-fourth of the principal amount. Then R is _____
☆
a. 5 b. 6
c. $5^{1/2}$ d. $6^{1/2}$

PYQ Dec. 21

(58) A sum of money is put at 20% compound interest rate p.a. at which year the aggregated amount just exceeds the double of the original sum?
☆
a. 6 b. 5
c. 4 d. 3

PYQ June 22

(59) In how much time a sum of amount doubles at simple interest at 12.5% rate?
a. 7 years b. 8 years
c. 9 years d. 10 years

PYQ June 22

(60) The effective rate of interest corresponding a nominal rate of 7% p.a. convertible quarterly.
a. 7% b. 7.5%
c. 5% d. 7.18%

PYQ Dec 22

(61) A machine worth ₹ 4,90,740 is depreciated at 15% on its opening value each year. When would its value reduce to ₹ 2,00,750?
☆
a. 5 years 5 months
b. 5 years 6 months
c. 5 years 7 months
d. 5 years 8 months

PYQ Dec 22

(62) If ₹ 64 amount to ₹ 83.20 in 2 years, what will ₹86 amount to in 4 years at the same Rate percent per annum?
a. ₹ 127.60 b. ₹ 147.60
c. ₹ 145.34 d. ₹ 117.60

PYQ Dec 22

(63) A farmer borrowed ₹ 3,600 at the rate of 15% simple interest per Annum. At the end of 4 years, he cleared this account by paying ₹ 4,000 and a cow. The cost of the cow is:
a. ₹ 1,000 b. ₹ 1,200
c. ₹ 1,550 d. ₹ 1,760

PYQ Dec 22

(64) The effective annual rate of interest corresponding to a normal rate of 6% per annum payable half yearly is:
a. 6.06% b. 6.07%
c. 6.08% d. 6.09%

PYQ Dec 22

(65) Mr. Prakash invested money in two schemes 'A' and 'B' offering compound interest at the rate of
☆ 8% and 9% per annum respectively. If the total amount of interest accrued through these two schemes together in two years was ₹4,818.30 and total amount invested was ₹ 27,000. What was the amount invested in schemes 'A'?
a. ₹ 12,000 b. ₹ 12,500
c. ₹ 13,000 d. ₹ 13,500

PYQ Dec 22

(66) A sum of money invested of compound interest double itself in four years. In how many years it
☆ become 32 times of itself at the same rate of compound interest?
a. 12 years b. 16 years
c. 20 years d. 24 years

PYQ Dec 22

(67) The difference between compound interest and simple interest on an amount of ₹ 15,000 for 2 years is ₹ 96. What is the rate of interest per annum?
a. 9% b. 8%
c. 10% d. 11%

PYQ Dec 22

(68) A sum of money doubles itself in 4 years at certain compound interest rate. In how many years this sum will become 8 times at the same compound interest rate?
a. 12 years b. 14 years
c. 16 years d. 18 years

PYQ Jun 23

(69) Mr. Ram invested a total of ₹ 1,00,000 in two different banks for a fixed period. The first bank yields an interest of 9% per annum and second, 11% per annum. If the total interest at the end of one year is 9.75% per annum, there the amount invested in these banks are respectively:

a. ₹ 52,500, ₹47,500
b. ₹ 62,500, ₹ 37,500
c. ₹ 57,500, ₹ 42,500
d. ₹ 67,500, ₹ 32,500

PYQ Jun 23

(70) The nominal rate of interest is 10% per annum. The interest is compounded quarterly. The effective rate of interest per annum will be:

a. 10% b. 10.10%
c. 10.25% d. 10.38%

PYQ Jun 23

(71) The difference between compound interest and simple interest on a certain sum of money invested for 3 years at 6% per annum is ₹ 110.16. The principal is

a. ₹ 3,000 b. ₹ 3,700
c. ₹ 12,000 d. ₹ 10,000

PYQ Jun 23

(72) A machine depreciates 10% of its value at the beginning of the year. The cost and scrap value realized at the time of sale being ₹ 23,240 and ₹ 9,000 respectively. Approximately, for how many years the machine is put to use?

a. 7 b. 8
c. 9 d. 10

PYQ Jun 23

(73) The population of a town increases every year by 2% of the population at the beginning of that year. The approximate number of years, by which the total increase of population will be 40%, is _____ (Given $1.02^8 = 1.17166$)

a. 15 b. 17
c. 19 d. 20

PYQ Jun 23

(74) The compound interest on ₹ 15,625 for 9 months at 16% per annum compounded quarterly is:

a. ₹ 1,851 b. ₹ 1,941
c. ₹ 1,951 d. ₹ 1,961

PYQ Jun 23

(75) Jonny wants to have ₹ 2,00,000 in his saving account after three year. The rate of interest offered by bank is 8% per annum compounded annually. How much should he invest today to achieve his target amount?

a. ₹ 1,47,489.10 b. ₹ 1,58,766.44
c. ₹ 1,71,035.59 d. ₹ 1,84,417.96

Answer Key

1 a	2 b	3 b
4 a	5 a	6 a
7 b	8 b	9 a
10 c	11 a	12 d
13 a	14 b	15 b
16 c	17 c	18 a
19 a	20 b	21 b
22 b	23 a	24 a
25 a	26 a	27 a
28 a	29 a	30 a
31 a	32 b	33 a
34 b	35 c	36 b
37 c	38 d	39 b
40 c	41 b	42 a
43 a	44 d	45 c
46 c	47 b	48 b
49 b	50 d	51 b
52 a	53 b	54 c
55 b	56 c	57 a
58 c	59 b	60 d
61 b	62 c	63 d
64 d	65 a	66 c
67 b	68 a	69 b
70 d	71 d	72 c
73 b	74 c	75 b

Simple Interest and Compound Interest

Mock Test Paper Questions

MTP May 18

(1) Nominal rate of Interest 9.9% p.a. If Interest is compounded monthly. What will be the effective rate of Interest? (Given $\left(\frac{4033}{4000}\right)^{12} = 1.1036$)

a. 10.36% b. 9.36%
c. 11.36% d. 9.9%

MTP May 18

(2) A machine worth of ₹ 4,90,740 is depreciated at 15% on its opening value each year. When its value reduce to ₹ 2,00,000

a. 5 years 6 months
b. 5 years 7 months
c. 5 years 5 months
d. None of these

MTP May 18

(3) A sum of money doubles itself at compound interest in 10 years. In how many years will it become eight times

a. 10 b. 30
c. 40 d. 35

MTP May 18

(4) The time in which a sum of money will be doubled at 6% compound interest compounded interest compounded interest compounded annually approximately.

a. 10 years b. 12 years
c. 13 years d. 14 years

MTP Nov 18

(5) A lent ₹ 6000 to B for 2 years and 1500 to C for 4 years and received total interest of ₹ 900 from both. The rate of interest when simple interest method calculated.

a. 5% b. 6%
c. 7.5% d. 9%

Note: There was a typo in que of MTP which is corrected here.

MTP Nov 18

(6) If the difference between the interests received from two different banks on ₹ 5000 for 2 years is ₹ 50 then the difference between this rates.

a. 0.25% b. 0.40%
c. 0.50% d. 0.75%

MTP Nov 18

(7) The simple interest of P % for P years will be ₹ P on a sum of :

☆

a. $₹ \frac{p}{100}$
b. $₹ \frac{100}{p}$
c. $₹ \left(\frac{p}{100}+1\right)$
d. $₹ \left(\frac{100}{p}-1\right)$

MTP Nov 18

(8) The compound interest on a certain sum is ₹ 209 simple interest is ₹ 200 for 2 years. What is the rate per cent for 2 years? what is the rate percent?

☆

a. 9% b. 18%
c. 4.5% d. 10%

MTP Nov 18

(9) The value of a machine depreciates 12% annually. If the present value of ₹ 68,150 then its value in 3 years ago was.

a. ₹ 1,10,000 b. ₹ 1,00,004
c. ₹ 92,000 d. ₹ 97,000

MTP Nov 18

(10) What principal will amount to ₹ 370 in 6 years at 8% p.a. at simple interest

a. ₹ 210 b. ₹ 250
c. ₹ 310 d. ₹ 310

MTP Nov 18

(11) The effective rate of interest is an amount ₹ 25,000 is deposited in a bank for one year at value of 6% per annum compounded semi-annually is

a. 5.99% b. 5.95%
c. 6.09% d. 6.90%

MTP Nov 18

(12) A Sum of money doubles itself in 10 years. The number of years it would be trebled itself is:

a. 25 years b. 15 years
c. 20 years d. None of these

MTP May 19

(13) A certain money doubles itself in 10 years when deposited on simple interest. It would triple itself in

a. 30 years b. 20 years
c. 25 years d. 15 years

MTP May 19

(14) A man deposited ₹ 8,000 in a bank for 3 years at 5% per annum compound interest, after 3 years he will get

a. ₹ 9000 b. ₹ 8800
c. ₹ 9200 d. ₹ 9261

MTP May 19 – Error in MTP

(15) The effective rate of interest for one year corresponding to a nominal at 7% rate of interest per annum convertible quarterly is

a. 7% b. 7.02%
c. 8% d. 7.18 %

Note: All the options given in MTP were wrong, we have revised here as per que.

MTP May 19

(16) The population of a town increases every year by 2 % of the population beginning of that year. The number of years by which the total increase of population be 40% is

a. 7 years b. 10 years
c. 17 years (apx.) d. None of these

MTP May 19, ICAI SM

(17) The annual birth rates per 1,000 are 39.4 and 19.4 respectively. The number of years which the population will be doubled assuming there is no immigration or emigration is

a. 35 years b. 30 years
c. 25 years d. none of these

MTP May 19 Series II

(18) ₹ 10,000 is invested at annual rate of interest of 10% p.a. The amount after two years at annual compounding is

a. ₹ 21100 b. ₹ 12100
c. ₹ 12110 d. None of these

MTP May 19 Series II - Error in MTP

(19) The annual birth rate and death rate per 1000 are 39.4 and 19.4 respectively. The number of years in which population will be doubled assuming that there is no immigration or emigration is approximately

a. 40 Years b. 30 years
c. 35 Years d. 25 years

MTP May 19 Series II

(20) If the effective rate of interest is 12% per annum and the interest is compounded quarterly, the nominal rate of interest per annum

a. 11.78 % b. 11.21 %
c. 11.89% c d. 11.49 %

Note: The nominal rate should be 11% but given wrong in MTP as 12%

MTP May 19 Series II, ICAI SM

(21) The difference between CI and SI on a certain money invested for three years at 6% per annum is ₹ 110.16. The sum is

a. ₹ 3000 b. ₹ 3700
c. ₹ 12000 d. ₹ 10000

MTP May 19 Series II

(22) Simple interest on ₹ 3500 for 3 years at 12% per annum is

a. ₹ 1200 b. ₹ 1260
c. ₹ 2260 d. ₹ 2000

MTP Nov 19

(23) ₹ 1000 is invested at annual rate of interest of 10% p.a. The amount after two years if compounding is done annually is _____.

a. ₹ 121 b. ₹ 1210
c. ₹ 2110 d. None of these

MTP Nov 19

(24) If A person invests ₹ 3,000 in a three years' investment that pays you 12% per annum. Calculate the future value of the investment.

a. ₹ 4214.78 b. ₹ 4124.78
c. ₹ 4324.48 d. ₹ 4526.48

MTP Nov 19

(25) ☆ A person deposited a sum of ₹ 10,000 in a bank. After 2 years, he withdrew ₹ 4,000 and at the end of 5 years, he received an amount of ₹ 7,900; then the rate of simple interest is:

a. 6% b. 5%
c. 10% d. None of these

MTP Nov 19

(26) ☆ A trust fund has invested ₹ 30,000 in two different types of bonds which pays 5% and 7% interest respectively. Determine how much amount is invested in second type of bond if trust obtains an annual total interest of ₹ 1600.

a. ₹ 5000 b. ₹ 6000
c. ₹ 7000 d. ₹ 8000

MTP Nov 19 – Error in MTP

(27) ☆ At six months intervals A deposited ₹ 1000 in a savings account which credit interest at 10% p.a., compounded semi-annually. The first deposit was made when A's son was 6 months old and last deposit was made when his son was 8 years old. The money remained in the account and was given to the son on his 10th birthday. How much did he receive?

$(1.05)^{16} = 2.1829$

a. ₹ 25740 b. ₹ 23740
c. ₹ 27860 d. ₹ 29760

Note: All options are incorrect, right ans is ₹ 28755

MTP Nov 19

(28) What is the effective rate of interest if the nominal rate 5 % p.a converted quarterly?

a. 6.09 % b. 5.09 %
c. 5.55% d. 5.60 %

MTP Nov 19

(29) A sum of money doubles itself at compound interest in 10 years. In how many years will it become eight times?

a. 20 b. 30
c. 40 d. 35

MTP Nov 19

(30) Certain sum of money borrowed at simple interest amount to Rs.2688 in three years and to ₹ 2784 in four years at the rate per annum equal to.

a. 7% b. 6%
c. 5% d. 4%

MTP May 20

(31) A sum of ₹ 46,875 was lent out at simple interest and at the end of 1 year 8months the total amount was ₹ 50,000. Find the rate of interest percent per annum.

a. 5% b. 6%
c. 4% d. 8%

MTP May 20

(32) A = ₹ 5,200, R = 5% p.a., T = 6 years, P will be

a. ₹ 2,000 b. ₹ 3,880
c. ₹ 3,000 d. none of these

MTP May 20

(33) The time by which a sum of money would treble itself at 8% p. a C. I is

a. 14.28 years b. 14 years
c. 12 years d. none of these.

MTP May 20

(34) A machine depreciates at 10% of its value at the beginning of a year. The cost and scrap value realized at the time of sale being ₹ 23,240 and ₹ 9,000 respectively. For how many years the machine was put to use?

a. 7 years b. 8 years
c. 9 years d. 10 years

MTP May 20

(35) The compound interest on half-yearly rests on ₹ 10,000 the rate for the first and second years being 6% and for the third year 9% p.a. is

a. ₹ 2,200 b. ₹ 2,287
c. ₹ 2,285 d. ₹ 2290.84

MTP May 20

(36) The effective rate of interest corresponding to a nominal rate 3% p.a payable half yearly is

a. 3.2% p.a b. 3.25% p.a
c. 3.0225% p.a d. none of these

MTP Nov 20

(37) A sum of money triples itself in 18 years under simple interest. what is the rate of interest per annum?

a. 9% b. 9.09%
c. 11.11% d. 13%

MTP Nov 20

(38) What time will be required for a sum of money to double itself at 8 % Simple interest?

a. 8 years b. 8.5 years
c. 12.5 years d. 12 years

MTP Nov 20

(39) The difference between simple interest and compound interest on a sum of ₹ 6,00,000 for two years is ₹ 6000. What is the annual rate of interest?

a. 8% b. 10%
c. 6% d. 12%

MTP Nov 20

(40) What is the sum of money will amount to ₹ 11035.50 in four years at compound interest for 1st, 2nd, 3rd and 4th years being 4%, 3%, 2% and 1% respectively.

a. ₹ 10,000 b. ₹ 11,000
c. ₹ 1035 d. ₹ 11,305

MTP Nov 20

(41) A Machine was purchased for ₹ 10,000. Its rate of depreciation is 10% in the first year and 5 % per annum afterwards. Find the depreciated value of Machine after 7 years of purchase
(Given $(0.95)^6 = 0.7351$)

a. ₹ 6606 b. ₹ 6616
c. ₹ 6660 d. ₹ 6661

MTP Nov 20

(42) The effective rate of interest for one-year deposit corresponding to a nominal 7 % rate of interest per annum convertible quarterly is

a. 7% b. 7.5%
c. 7.4% d. 7.18%

MTP Nov 20

(43) What will be the population after three years when present population is ₹25,000 and population increases at the rate of 3 % in first year, 4 % in second year and 5 % in third year?

a. 28119 b. 29118
c. 27000 d. 30000

MTP Nov 20

(44) SI = 0.125 P at 10% p.a find the time

a. 1.25 years b. 25 years
c. 0.25 years d. None of these

MTP March 21

(45) ₹ 8,000 becomes ₹ 10,000 in two years at simple interest. The amount that will become ₹ 6,875 in 3 years at the same rate of interest is:

a. ₹ 4850 b. ₹ 5000
c. ₹ 5500 d. ₹ 5275

Note: All options are incorrect, correct is ₹4828

MTP March 21

(46) The difference between the simple and compound interest on a certain sum for 3 year at 5% p.a. is ₹ 228.75. The compound interest on the sum for 2 years at 5% p.a. is:

a. ₹ 3175 b. ₹ 3075
c. ₹ 3275 d. ₹ 2975

MTP March 21

(47) A sum of money doubles itself in 10 years. The number of years it would treble itself is:

a. 25 years b. 15 years
c. 20 years d. None of these

MTP March 21

(48) The effective rate equivalent to nominal rate of 6% compounded monthly is:

a. 6.05 b. 6.17
c. 6.26 d. 6.07

MTP March 21

(49) A person borrows ₹ 5,000 for 2 years at 4% p.a. simple interest. He immediately lends to another person at $6\frac{1}{4}$% p.a. for 2 years. Find his gain in the transaction per year:

a. ₹ 112.50 b. ₹ 125
c. ₹ 225 d. ₹ 167.50

MTP March 21

(50) The cost of machinery is ₹ 1,25,000/- if its useful life is estimated to be 20 years and the rate of depreciation of its cost is 10% p.a., then the scrap value of the Machinery is [given that $(0.9)^{20} = 0.12158$]

a. 15,197 b. 15,400
c. 15,300 d. 15,250

MTP March 21

(51) If A person invests ₹ 5,000 in a three years' investment that pays you 12% per annum. Calculate the future value of the investment.

a. ₹ 7024.64 b. ₹ 7124.78
c. ₹ 7324.48 d. ₹ 7526.48

MTP Apr 21

(52) Two equal sums were lent out at 7% and 5% simple interest respectively. The interest earned on the two loans adds up to ₹ 960 for four years. Find the total sum lent out.

a. ₹ 4000 b. ₹ 3000
c. ₹ 5000 d. ₹ 6000

MTP Apr 21

(53) A sum of money amounts to Rs. 20,800 in 5 years and ₹ 22720 in 7 years. Find the principle and rate of interest.

a. ₹ 5000, 6% b. ₹ 16000, 6%
c. ₹ 80000, 8% d. ₹ 10000, 10%

MTP Apr 21, ICAI SM

(54) The annual birth and death rates per 1000 are 39.4 and 19.4 respectively. The number of years in which the population will doubled assuming there is no immigration or emigration is:

a. 35 years b. 30 years
c. 25 years d. None of these

MTP Apr 21

(55) The effective annual rate of interest corresponding to nominal rate 6% p.a. payable half yearly is

a. 6.06 b. 6.07
c. 6.08 d. 6.09

MTP Apr 21

(56) The cost of machinery Rs.1,25,000 if its useful life estimated to the 20 years and the rate of depreciation of its cost is 10% p.a . Then scrap value of machinery is (given that $(0.9)^{20}$ = 0.1215)

a. Rs. 15,187 b. Rs. 15,400
c. Rs. 15,300 d. Rs. 15,250

MTP Apr 21

(57) If a simple interest on a sum of money at 6% p.a for 7 years is equal to twice of simple interest on another sum for 9 years at 5% p.a. The ratio will be

a. 2:15 b. 7:15
c. 15:7 d. 1:7

MTP Apr 21

(58) In what will be a sum of money double itself at 6.25% p.a . Simple interest?

a. 5 years b. 8 years
c. 12 years d. 16 years

MTP Apr 21

(59) What will be population after 3 years when present population is 25,000 and population increase at the rate of 3% in first year , at 4% in second year and at 5 % in third year ?

a. 28,119 b. 29,118
c. 30,100 d. 27,100

MTP Apr 21

(60) A sum amount to Rs. 1331 at a principal of Rs.1000 at 10% compounded annually. Find the time

a. 3.31 years b. 4 years
c. 3 years d. 2 years

MTP Nov 21

(61) The sum of money doubles itself in 10 years. The number of years it would be treble itself is:

a. 25 years b. 15 years
c. 20 years d. None of these

MTP Nov 21

(62) ☆ Arun purchased a vaccum cleaner by giving ₹1700 as cash down payment, which will be followed by five EMIs of ₹480 each. The vaccum cleaner can also be bought by paying ₹3900 cash. What is the approx. rate of interest p.a. (at simple interest) under this instalment plan?

a. 18% b. 19%
c. 22% d. 20%

MTP Nov 21

(63) If a sum triples itself in 15 years at simple rat of interest, the rate of interest per annum will be:

a. 13% b. 13.3%
c. 13.5% d. 18.0%

MTP Nov 21

(64) What will be population after 3 years when present population is 25, 000 and population increases at the rate of 3% in I year, at 4% in II year and 5% in III year?

a. Rs.28,119 b. Rs.29,118
c. Rs.27, 000 d. Rs.30, 000

MTP Nov 21

(65) He effective rate of interest equivalent to the nominal rate of 7% converted monthly:

a. 7.26% b. 7.22%
c. 7.02% d. 7.20%

MTP Nov 21

(66) How much will be Rs.25,000 to in 2 years at compound interest if the rates for the successive years are at 4% and 5% per year

a. Rs.27,300 b. Rs.27,000
c. Rs.27,500 d. Rs.27,900

MTP Oct 21

(67) A sum of ₹ 46,875 was lent out at simple interest and at the end of 1 year 8 months, the total amount was ₹ 50,000. Find the rate of interest per annum.

a. 8% b. 10%
c. 12% d. None

Note: Given ans in MTP is wrong, correct is 4%

MTP Oct 21, ICAI SM

(68) A sum of money amount to ₹ 6,200 in 2 years and ₹ 7,400 in 3 years. The principal and rate of interest are

a. ₹ 3,800, 31.57% b. ₹3,000, 20%
c. ₹3,500, 15% d. none of these

MTP Oct 21

(69) The effective rate of interest corresponding to a nominal rate 3% p.a payable half yearly is

a. 3.2% p.a b. 3.25% p.a
c. 3.0225% p.a d. none of these

MTP Oct 21

(70) ☆ A sum of money gets doubled in 5 years at X% simple interest. If the interest was Y%, the sum of money would have become ten-fold in thirty years. What is Y – X (in %)

a. 10 b. 5
c. 8 d. none of these

MTP Oct 21

(71) The difference between Compound Interest and Simple Interest on a certain sum for 2 years at 6% p.a. is ₹ 13.50. Find the sum

a. 3750 b. 2750
c. 4750 d. none of these

MTP Oct 21, ICAI SM

(72) The sum required to earn a monthly interest of Rs 1200 at 18% per annum Simple Interest is

a. ₹ 50,000 b. ₹ 60,000
c. ₹ 80,000 d. none of these

MTP Oct 21

(73) The compound interest earned by a money lender on ₹ 7,000 for 3 years if the rate of interest for 3 years are 7%, 8% and 8.5% respectively is

a. ₹ 1750 b. ₹ 1800
c. ₹ 1776 d. none of these

MTP Oct 21

(74) A Maruti Zen cost ₹ 3,60,000. Its price depreciates at the rate of 10% of a year during the first two years and at the rate of 20% in third year. Also find the total depreciation.

a. ₹ 1,26,720 b. ₹ 1,15,620
c. ₹ 1,25,000 d. ₹1,10,520

MTP March 22

(75) In what time will be a sum of money doubles itself at 6.25% p.a simple interest?

a. 5 years b. 8 years
c. 12 years d. 16 years

MTP March 22

(76) The difference between the simple and compound interest on a certain of 3 years at 5% p.a is ₹₹ 228.75. The compound interest on the sum of for 2 years at 5% per annum is

a. ₹3175 b. ₹3075
c. ₹3275 d. ₹2975

MTP March 22

(77) How much time would the simple interest on a certain sum be 0.125 times the principal at 10% per annum

a. $1\frac{1}{4}$ years b. $1\frac{3}{4}$ years
c. $2\frac{1}{4}$ years d. $2\frac{3}{4}$ years

MTP March 22

(78) The time in by which a sum of money is 8 times of itself if it doubles itself in 15 years interest compounded annually.

a. 42 years b. 43 years
c. 45 years d. 46 years

MTP March 22

(79) Present value of a scooter is ₹7290, if its value decreases every year by 10% then the value before 3 years is equal to

a. 10,000 b. 10,500
c. 20,000 d. 20,500

MTP March 22

(80) Find the effective rate of interest at 10% p.a when the interest is payable quarterly.

a. 10.38% b. 5%
c. 5.04% d. 4%

MTP March 22

(81) The difference between in simple interest on a sum invested of ₹1500 for 3 years is ₹18. The difference in their rate is

a. 0.4 b. 0.6
c. 0.8 d. 0.10

MTP March 22

(82) What will be the population after 3 years when present population is 25000, if the population increases at the rate 3 % in I year, 4 % in II year and 5% in III year.

a. 28,119 b. 29,118
c. 27,000 d. 30,000

MTP March 22

(83) If ₹10,000 is invested at 8 % per annum, then compounded quarterly. Then value of investment after 2 years is

a. ₹ 11,716.59 b. ₹ 10,716.59
c. ₹ 12,715.59 d. none of these

MTP March 22

(84) In how many years will a sum of money become double at 5% p.a compound interest

a. 14 years b. 15 years
c. 16 years d. 14.3 years

MTP June 22

(85) Find the effective rate of interest if an amount of 30,000 deposited in a bank. For 1 year at the rate of 10% per annum compounded semi-annually.

a. 10.05% b. 10.10%
c. 10.20% d. 10.25%

MTP June 22

(86) The present population of a town is 25,000. If it grows at the rate of 4%, 5%, 8% during 1st year, 2nd year, 3rd year respectively. Then find the population after 3 years.

a. 29,484 b. 29,844
c. 29,448 d. 28,944

MTP June 22

(87) The present value of a scooter is ₹ 7290. The rate of depreciation is 10%. What was its value 3 years ago?

a. 10000 b. 10010
c. 9990 d. 12000

MTP June 22

(88) ★ The rate of interest for the first 2 year is 3% per annum, for next 3 years is 8% per annum and for the period beyond 5 years, 10% per annum. If a man gets ₹ 1520 as a simple interest for 6 years; how much money did he deposit?

a. ₹ 3800 b. ₹ 3800
c. ₹ 4000 d. None of these

MTP June 22

(89) The difference between simple interest and compound interest on a certain for 2 years at 10% p.a . is ₹ 10. Find the Sum

a. ₹ 1010 b. ₹ 1095
c. ₹ 1000 d. ₹ 990

MTP June 22

(90) In how many years will a sum of money becomes four times at 12% p.a. simple interest?

a. 18 years b. 21 years
c. 25 years d. 28 years

MTP June 22

(91) The effective rate of interest does not depend upon

a. Amount of Principal
b. Amount of Interest
c. Number of Conversion periods
d. None of these

MTP June 22

(92) Find the effective rate of interest at 10% p.a. When interest is payable quarterly.

a. 10.38% b. 5%
c. 5.04% d. 4%

MTP June 22

(93) In simple interest if the principle is ₹ 2,000 and the rate and time are roots of the equation $x^2 - 11x + 30 = 0$

a. ₹ 500 b. ₹ 600
c. ₹ 700 d. ₹ 800

MTP Dec 22 – Series I

(94) Rajesh deposits ₹ 3,000 at the start of each quarter in his savings account. If the account earns interest of 5.75% per annum compounded quarterly, how much money (in ₹) will he have at the end of 4 years? [Given that $(1.014375)^{16} = 1.25654$]

a. ₹ 54308.6 b. ₹ 58553.6
c. ₹ 68353.6 d. ₹ 63624.4

Note: Que belong to Annuity Topic

MTP Dec 22 – Series I

(95) The annual rate of simple interest is 12.5%. In how many years does principal doubles?

a. 11 years b. 9 years
c. 8 years d. 7 years

MTP Dec 22 – Series I

(96) Certain sum of money borrowed at simple interest to ₹ 2688 in three years and to ₹ 2784 in four years at the rate per annum equal to -

a. 4% b. 6%
c. 5% d. 7%

MTP Dec 22 – Series I

(97) ☆ An investment is earning compounded interest ₹ 100 invested in the year 2 accumulated to ₹ 105 by year 4. If ₹ 500 is invested in the year 5, will become ₹ _____ by year 10.

a. ₹ 364.80 b. ₹ 564.80
c. ₹ 464.80 d. ₹ 664.80

MTP Dec 22 – Series I

(98) An investor is saving to pay off an obligation of ₹ 15,250 which will due in seven years, if the investor is earning 7.5% simple interest rate per annum, he must deposit ₹ _____ to meet the obligation.

a. ₹ 8000 b. ₹ 9000
c. ₹ 10000 d. ₹ 11000

MTP Dec 22 – Series I

(99) The value of the scooter is ₹ 1,00,000 find its depreciation is 10% p.a. Calculate the total depreciation value at the end of seven years.

a. ₹ 47829.70 b. ₹ 47000.90
c. ₹ 42709 d. ₹ 42,000

Note: Que requirement should be to calculate WDV value and not the depreciation.

MTP Dec 22 – Series I

(100) Effective rate of interest does not depend upon

a. Amount of Principal
b. Amount of Interest
c. Number of conversion periods
d. none of these

MTP Dec 22 Series II

(101) A man invests ₹ 12,000 at 10% p.a. and another sum of money at 20% p.a for one year. The total investment earns at 14% p.a. simple interest the total investment is:

a. ₹ 8000 b. ₹ 20000
c. ₹ 14000 d. ₹ 16000

MTP Dec 22 Series II

(102) The difference in simple interest of a sum invested of ₹ 1,500 for 3 years is ₹ 18. The difference in their rates is:

a. 0.4 b. 0.6
c. 0.8 d. 0.10

MTP Dec 22 Series II

(103) Find the effective rate of interest on ₹ 10,000 on which interest is payable half yearly at 5% p.a.

a. 5.06% b. 4%
c. 0.4% d. 3%

MTP Dec 22 Series II

(104) Find the effective rate of interest at 10% p.a. when interest is payable quarterly.

a. 10.38% b. 5%
c. 5.04% d. 4%

MTP Dec 22 Series II

(105) What will be the population after 3 years when the present population is 25,000 the and population increases at the rate of 3% in 1st year, at 4% in, 2nd year and at 5% in 3rd year?

a. 28,119 b. 29,118
c. 27,000 d. 30,000

MTP Dec 22 Series II

(106) The value of scooter is ₹ 10,000. Find its value after 7 years if rate of depreciation is 10% p.a.

a. ₹ 4,782.96 b. ₹ 4,278.69
c. ₹ 42,079 d. ₹ 42,000

MTP Dec 22 Series II

(107) The difference between the CI and SI for 2 years is 21. If the rate of interest is 5%, the final principle is:

a. ₹ 8,200 b. ₹ 4,800
c. ₹ 8,000 d. ₹ 8,400

MTP Dec 22 Series II

(108) ☆ Mr. X lent some amount of money at 4% S.I. and he obtained ₹ 520 less than he lent in 5 years. The sum lent is

a. ₹ 620 b. ₹ 650
c. ₹ 750 d. none of these

MTP Dec 22 Series II

(109) ☆ ₹ 8,829 is invested into three different sectors in such a way that their amounts at 4% p.a. S.I. after 5 years; 6 and 8 years are equal. Find each part of the sum.

a. ₹ 3,069, ₹ 2,970; ₹ 2,790
b. ₹ 3,089, ₹ 2,970; ₹ 2,790
c. ₹ 3,609, ₹ 2,970; ₹ 2,790
d. ₹ 3,069, ₹ 2,960; ₹ 2,760

MTP Jun 23 Series I

(110) ₹ 80,000 is invested to earn a monthly interest of ₹ 1200 at the rate of _____p.a. Simple interest.

a. 12% b. 14%
c. 16% d. 18%

MTP Jun 23 Series I

(111) The effective annual rate of interest corresponding to a normal rate of 6% per annum payable half yearly is:

a. 6.06% b. 6.07%
c. 6.08% d. 6.09%

MTP Jun 23 Series I

(112) A trust fund has invested ₹ 27000 money in two schemes 'A' and 'B' offering compound interest at the rate of 8% and 9% per annum respectively. If the total amount of interest accrued through these two schemes together in two years was ₹ 4818.30. What was the amount invested in schemes 'A'?

a. ₹ 12,000 b. ₹ 12,500
c. ₹ 13,000 d. ₹ 12,500

MTP Jun 23 Series I

(113) A sum of money invested of compound interest double itself in four years. In how many years it become 32 times of itself at the same rate of compound interest.

a. 12 years b. 16 years
c. 20 years d. 18 years

MTP Jun 23 Series I

(114) The difference between compound interest and simple interest on an amount of ₹ 15,000 for 2 years is ₹ 96. What is the rate of interest per annum?

a. 9% b. 8%
c. 11% d. 10%

MTP Jun 23 Series II

(115) Mr. A invested ₹ x in an organization, it amounts to ₹ 150 at 5% p.a. S.I. and to ₹ 100 at 3% p.a. S.I. Then the value of x is

a. ₹ 70 b. ₹ 40
c. ₹ 25 d. None of these

MTP Jun 23 Series II

(116) Mrs. Sudha lent ₹ 4,000 in such a way that some amount to Mr. A at 3% p.a. S.I. and rest amount to B at 5% p.a. S.I., the annual interest from both is ₹ 144, Find the amount lent to Mr. A

a. ₹ 2,800 b. ₹ 1,200
c. ₹ 2,500 d. None of these

MTP Jun 23 Series II

(117) A certain sum of money becomes double at 5% rate of S.I. p.a. in a certain time, the time in years is

a. 10 years b. 20 years
c. 25 years d. None of these

MTP Jun 23 Series II

(118) A certain sum of money amounts to ₹ 5,000 in 5 years at 10% p.a. In how many years will it amount to ₹ 6,000 at same rate of S.I p.a.

a. 10 years b. 8 years
c. 6 years d. None of these

MTP Jun 23 Series II

(119) ₹ 1,25,000 is borrowed at compound interest at the rate of 2% for the 1st year, 3% for the second year and 4% for the 3rd year. Find the amount to be paid after 3 years

a. ₹ 125678 b. ₹ 136587
c. ₹ 163578 d. ₹ 136578

MTP Jun 23 Series II

(120) A certain sum of money amounts to double in 5 years placed at a compound interest. In how many years will it amount to 16 times at same rate of interest?

a. 12 years b. 20 years
c. 24 years d. None of these

MTP Jun 23 Series II

(121) If the compound interest on a certain sum of money for 3 years at 5% p.a. be ₹ 50.44, then the simple interest (S.I) is

a. ₹ 50 b. ₹ 49
c. ₹ 48 d. None of these

MTP Jun 23 Series II

(122) If the difference between C.I and S.I on a certain sum of money at 5% p.a. for 2 years is ₹ 1.50. Find the sum of money

a. ₹ 600 b. ₹ 500
c. ₹ 400 d. None of these

Answer Key

1	a	2	a	3	b
4	b	5	a	6	c
7	b	8	a	9	b
10	b	11	c	12	c
13	b	14	d	15	d
16	c	17	a	18	b
19	c	20	d	21	d
22	b	23	b	24	a
25	b	26	a	27	b
28	b	29	b	30	d
31	c	32	b	33	a
34	c	35	d	36	c
37	c	38	c	39	b
40	a	41	b	42	d
43	a	44	a	45	b
46	b	47	c	48	b
49	a	50	a	51	a
52	a	53	b	54	a
55	d	56	a	57	c
58	d	59	a	60	c
61	c	62	c	63	b
64	a	65	b	66	a
67	b	68	a	69	c
70	a	71	a	72	c
73	c	74	a	75	d
76	b	77	a	78	c
79	a	80	a	81	a
82	a	83	a	84	d
85	d	86	a	87	a
88	a	89	c	90	c
91	a	92	a	93	b
94	a	95	c	96	a
97	b	98	c	99	a
100	a	101	b	102	a
103	a	104	a	105	a
106	a	107	d	108	b
109	a	110	d	111	d
112	a	113	c	114	c
115	c	116	a	117	b
118	b	119	d	120	b
121	b	122	a		

Future Value and Present Value of Annuity

Past Year Questions

PYQ May 19

(1) *Mr. X invest ₹ 10,000 every year starting from today for next: 10 years suppose interest rate is 8% per annual compounded annually. Calculate future value of the annuity.*

a. ₹ 1,56,454.88
b. ₹ 1,56,554.88
c. ₹ 1,44,865.625
d. None of these

PYQ May 19

(2) *How much amount is required to be invested every year so as to accumulate ₹ 3,00,000 at the end of the 10 years, if interest is compounded annually at 10%?*

a. ₹ 18,823.65
b. ₹ 18
c. ₹ 18,828.65
d. ₹ 18,882.65

PYQ Nov 18

(3) ☆ *A man invests an amount of ₹ 15,860 in the names of his three sons A, B and C in such a way that they get the same interest after 2, 3 and 4 years respectively. If the rate of interest is 5%, then the ratio of amount invested in the name of A, B and C is:*

a. 6 : 4 : 3
b. 3 : 4 : 6
c. 30 : 12 : 5
d. None of these

PYQ Nov 18

(4) *The value of furniture depreciates by 10% a year, it the present value of the furniture in an office is ₹ 21,870. Calculate the value of furniture 3 years ago*

a. ₹ 30,000
b. ₹ 35,000
c. ₹ 40,000
d. ₹ 50,000

Note: Que to be classified under CI Category

PYQ June 19

(5) *Let a person invest a fixed sum at the end of each month in an account paying interest 12% per year compounded monthly. If the future value of this annuity after the 12th payment is ₹ 55,000 then the amount invested every month is?*

a. ₹ 4,837
b. ₹ 4,637
c. ₹ 4,337
d. ₹ 3,337

PYQ Nov. 19

(6) Present value of a scooter is ₹ 7,290 if its value decreases every year by 10% then its value before 3 years is equal to:

a. 10,000 b. 10,500
c. 20,000 d. 20,500

PYQ Nov. 20

(7) Find the future value of annuity of ₹ 1,000 made annually for 7 years at interest rate of 14% compounded annually. Given that $1.14^7 = 2.5023$

a. 10,730.7 b. 5,365.35
c. 8,756 d. 9,892.34

PYQ Nov. 20

(8) Find the present value of ₹ 1,00,000 to be required after 5 years if the interest rate be 9% . Given that $1.09^5 = 1.5386$

a. 78,995.98 b. 64,994.15
c. 88,992.43 d. 93,902.12

PYQ Nov. 20

(9) A five year annuity due has periodic cash flow of ₹ 100 each year. If the interest rate is 8% the future value of this annuity is given by:

a. (₹ 100) × (future value at rate 8% for 5 years) × (0.08)
b. (₹ 100) × (future value at rate 8% for 5 years) × (1 - .08)
c. (₹ 100) × (future value at rate 8% for 5 years) × (1 + 0.08)
d. (₹ 100) × (future value at rate 8% for 5 years) × (1/0.08)

PYQ Nov. 20

(10) A person decides to invest ₹ 1,25,000 per year for the next five years in an annuity which gives 5% per annum compounded annually. What is the approx future value?
(use $1.05^5 = 1.2762$, if needed)

a. 1,59,535 b. 6,90,500
c. 5,90,704 d. 3,59,535

PYQ Nov. 20

(11) Which of the following statements is True? (assume that the yearly cash flow? Are identical for both annuities)

a. The present value of annuity due is greater than the present value of an ordinary annuity
b. The present value of an ordinary annuity is greater than the present value of an annuity due
c. The future value of an ordinary annuity is greater than the future value of an annuity due
d. The future value of an annuity due is equal to future value of an ordinary annuity.

PYQ Nov. 20

(12) ₹ 2,500 is paid every year for 10 years to pay off a loan. What is the loan amount if interest rate be 14% per annum compounded annually?

a. ₹ 15,847.90 b. ₹ 13,040.27
c. ₹ 14,674.21 d. ₹ 16,345.11

PYQ Jan. 21

(13) Find the future value of annuity of ₹ 1,000 made annually for 7 year at interest rate of 14% compounded annually (Given that $1.14^7 = 2.5023$)

a. ₹ 10,730.7
b. ₹ 5,365.35
c. ₹ 8,756
d. ₹ 9892.34

PYQ Jan. 21

(14) ₹ 800 is invested at the end of each month in an account paying interest 5% per year compounded monthly. What is the future value of this annually after 10^{th} payment?

a. ₹ 4,444 b. ₹ 8,756
c. ₹ 3,491 d. ₹ 8,151.67

PYQ Jan. 21

(15) The present value of an annuity immediate is the same as

a. Annuity regular for (n - 1) year plus the initial receipt in the beg. of the period.
b. Annuity regular for (n - 1) years
c. Annuity regular for (n + 1) years
d. Annuity regular for (n + 1) years plus the initial receipt in the beginning of the period.

PYQ July 21

(16) If the desired future value after 5 years with 18% interest rate is ₹ 1,50,000, then the present value (in ₹) is (Given that $(1.18)^5 = 2.2877$)?

a. 63,712 b. 65,568
c. 53,712 d. 41,712

PYQ July 21

(17) A loan of ₹ 1,02,000 is to be paid back in two equal annual instalments. If the rate of interest is 4% p.a. compounded annually, then the total interest charged (in ₹) under this instalment plan is:

a. 6,160 b. 8,120
c. 5,980 d. 7,560

PYQ July 21

(18) The future value of annuity of ₹ 2,000 for 5 years at 5% compounded annually is given (in nearest ₹) as:

a. 51,051 b. 21,021
c. 11,051 d. 61,254

PYQ Dec. 21

(19) Mr. X wants to accumulate ₹ 50,00,000 at the end of 10 years. Then how much amount is required to be invested every year if interest is compounded annually at 10%? (Given that P (10,0.10) = 15.9374298)

a. ₹ 3,13,726.87
b. ₹ 4,13,726.87
c. ₹ 3,53,726.87
d. ₹ 4,53,726.87

PYQ Dec. 21

(20) The present value of an **annuity** of ₹ 25,000 to be received after 10 years at 6% per annum compounded annually is ₹ _____

a. ₹ 15,960 b. ₹ 13,960
c. ₹ 11,960 d. ₹ 17,960

Note: Options are as per single cashflow so annuity word should not be there.

PYQ June 22

(21) ₹ 2500 is paid every year for 10 years to pay off a loan. What is the loan amount if interest rate be 14% per annum compounded annually?

a. ₹ 15,841.90 b. ₹ 13,040.27
c. ₹ 14,674.21 d. ₹ 14,010.90

PYQ June 22

(22) ₹ 200 is invested at the end of each month in an account paying interest 6% per year compounded monthly. What is the future value of this annuity after 10th payment?

a. ₹ 2,044 b. ₹ 12,044
c. ₹ 2,040 d. ₹ 12,000

PYQ June 22

(23) Anshika took a loan of ₹ 1,00,000 @ 8% for 5 years. What amount will she pay if she wants to pay the whole amount in five equal installments?

a. ₹ 25,045.63 b. ₹ 26,045.68
c. ₹ 28,045.50 d. None of these

PYQ June 22

(24) Ankit invests ₹ 3,000 at the end of each quarter receiving interest @ 7% per annum for 5 years. What amount will be receive at the end of the period?

a. ₹ 71,200.20 b. ₹ 71,104.83
c. ₹ 73,204.83 d. None of these

PYQ June 22

(25) A company establishes a sinking fund to provide for the payment ₹ 2,00,000 debt maturity in 20 years contribution to the fund are to be made at the end of every year. Find amount of each deposit of interest is 10% per annum?

a. ₹ 3,592.11 b. ₹ 3,492.11
c. ₹ 3,392.11 d. None of these

PYQ Dec 22

(26) How much amount is required to be invested every year so as to accumulate ₹ 5,00,000 at the end of 12 years if interest is compounded annually at 10% (Where A (12, 0.1) = 21.384284)

a. ₹ 23381.65 b. ₹ 24385.85
c. ₹ 26381.65 d. ₹ 28362.75

PYQ Dec 22

(27) 10 years ago the earning per share (EPS) of ABC Ltd. was ₹ 5 share. Its EPS for this year is ₹ 22. Compute at what rat, EPS of the company grow annually?

a. 15.97% b. 16.77%
c. 18.64% d. 14.79%

PYQ Dec 22

(28) Raju invests ₹ 20,000 every year in a deposit scheme starting from today for next 12 years. Assuming that interest rate on this deposit is 7% per annum compounded annually. What will be the future value of this annuity? Given that $(1+0.07)^{12} = 2.25219159$.

a. ₹ 540,526 b. ₹ 382,813
c. ₹ 643, 483 d. ₹ 357, 769

PYQ Dec 22

(29) Mr. A invested ₹ 10,000 every year for next 3 years at the interest rate of 8 percent per annum compounded annually. What is future value of the annuity?

a. ₹ 32,644 b. ₹ 32,464
c. ₹ 34,264 d. ₹ 36,442

PYQ Dec 22

(30) ₹ 5,000 is invested every month end in an account paying interest @12% per annum compounded monthly. What is the future value of this annuity just after making 11^{th} payment? (Given that $(1.01)^{11} = 1.1156$)

a. ₹ 57,800 b. ₹ 56,100
c. ₹ 56,800 d. ₹ 57,100

PYQ Dec 22

(31) Sinking fund factor is the reciprocal of:

a. Present value interest factor of a single cash flow
b. Present value interest factor of an annuity
c. Future value interest factor of an annuity
d. Future value interest factor of a single cash flow

PYQ Jun 23

(32) Suppose you have decided to make a Systematic Investment Plan (SIP) in a mutual fund with ₹ 1,00,000 every year from today for next 10 years where you get return at the rate of 10% per annum compounded annually. What is the future value of this annuity? Given $1.1^{10} = 2.59374$

a. ₹ 17,35,114 b. ₹ 17,53,411
c. ₹ 17,35,411 d. ₹ 17,53,114

PYQ Jun 23

(33) A company want to replace its existing tool room machine at the end of 10 years, the expected cost of machine would be ₹ 10,00,000. If management of the company creates a sinking fund, how much provision needs to be made out of revenue each year which can earn at the rate of 10% compounded annually?

a. ₹ 74,625 b. ₹ 72,514
c. ₹ 62,745 d. ₹ 67,245

PYQ Jun 23

(34) A car is available for ₹ 4,98,200 cash payment or ₹ 60,000 cash down payment followed by three equal annual instalments. If the rate of interest charged is 14% per annum compounded yearly, then total interest charged in the instalment plan is (Given P(2,0.14) = 2.32163):

a. ₹ 1,46,314 b. ₹ 1,46,137
c. ₹ 1,28,040 d. ₹ 1,58,040

PYQ Jun 23

(35) Govinda's mother decides to gift him ₹ 50,000 every year starting from today for the next five years. Govinda deposits this amount in a bank as and when he receives and gets 10% per annum interest rate, compounded annually. What is the present value of this annuity? Given P(4,0.10) = 3.16987.

a. ₹ 2,80,493.5 b. ₹ 2,08,493.5
c. ₹ 2,08,943.5 d. ₹ 2,58,493.5

Answer Key

1 a	2 a	3 a
4 a	5 c	6 a
7 a	8 b	9 c
10 b	11 a	12 b
13 a	14 d	15 a
16 b	17 a	18 c
19 a	20 b	21 b
22 a	23 a	24 b
25 b	26 a	27 a
28 b	29 b	30 a
31 c	32 a	33 c
34 c	35 b	

Future Value and Present Value of Annuity

Mock Test Paper Questions

MTP May 18

(1) Future value of Ordinary Annuity

a. $A(n,i) = A\left[\frac{(1+i)^n - 1}{i}\right]$

b. $A(n,i) = A\left[\frac{(1+i)^n + 1}{i}\right]$

c. $A(n,i) = A\left[\frac{1-(1+i)^n}{i}\right]$

d. $A(n,i) = A\left[\frac{(1+i)^n - 1}{i(1+i)^n}\right]$

MTP May 18, ICAI SM

(2) A sinking fund is created redeeming debentures worth ₹ 5,00,000 at the end of 25 years. How much provision need to be made out of profits each year provided sinking fund investments can earn at 4 % per annum

a. 12,006
b. 12,040
c. 12,039
d. 12,035

MTP Nov 18

(3) Find the future value of annuity ₹ 1000 made annually for 7 years at interest rate of 14% compounded annually is ____ Given $(1.14)^7 = 2.5023$

a. ₹ 10730.71 b. ₹ 10735
c. ₹ 10734 d. ₹ 10237

MTP Nov 18

(4) ₹ 10,000 is paid every year to off a loan, the loan amount if interest be 14% per annum compounded annually is (Given P(10, 0.14) = 5.21611)

a. ₹ 5216.11 b. ₹ 1917.13
c. ₹ 52,161.1 d. ₹ 19,171. 3

Note: Duration was not given in the question, we have taken it as 10 from here $(1.14)^7 = 2.5023$

MTP Nov 18

(5) The present value of ₹ 1 to be receive after 3 year compounded annually at 11% interest is

a. 0.713 b. 0.811
c. 0.731 d. 0.658

MTP Nov 18

(6) Suppose your father decides to gift you ₹ 5,000 every year starts from today for the next four years. You deposit the amount is a bank as and when you receive and get 10% per annum interest rate compound annually. The present value of this annuity is --------(given P(3,0.10) = 2.48685)

a. ₹ 17,434.25 b. ₹ 17,344.25
c. ₹ 17434.52 d. ₹ 17,344.52

MTP Nov 18

(7) Find the Present value of ₹ 10,000 to be required after 5 years, If the Interest be 9%. Given $(1.09)^5 = 21.5386$ (Error in MTP it is 1.5386)

a. Rs.6500 b. Rs.6499.42
c. Rs.6600.52 d. Rs.6700.52

Note: When factor are given in the question better to use that to get accurate answer.

MTP Nov 18

(8) Rs.500 is invested is invested at the end of each month is an account paying interest 8% per year compounded monthly. The future value of annuity after 10th payment is $(1.08)^{10} = 2.15893$

a. Rs.7243.31 b. Rs.7423.30
c. Rs.3451.50 d. Rs.3541.50

Note: Error in MTP Que – it should be annually not monthly then only we can get option a as the ans.

MTP May 19

(9) The value of furniture depreciates by 10% a year, if the present value of the furniture in an office is ₹ 21870, calculate the value of furniture 3 years ago.

a. ₹ 30000 b. ₹ 35000
c. ₹ 40000 d. ₹ 45000

MTP May 19

(10) Find the future value of an annuity of ₹ 500 made annually for 7 years at interest rate of 14 % per annum [Given the $(1.14)^7 = 2.5023$]

a. ₹ 5365.35 b. ₹ 5000
c. ₹ 5325.65 d. ₹ 6000.35

MTP May 19

(11) ₹ 200 invested at the end of each month in an account paying interest 6% per year compounded monthly. What is the future value of this annuity after 10th payment? [Given the $(1.005)^{10} = 1.0511$]

a. ₹ 2045 b. ₹ 5055
c. ₹ 2044 d. ₹ 2065

MTP May 19

(12) Suppose your father decides to gift you ₹ 10,000 every year starting from today for the next five years, you deposit this amount in a bank as and when you receive and get 10% per annum interest rate compounded annually. What is the present value of this annuity? (P (4, 0.10) = 3.16987)

a. ₹ 41, 698.70 b. ₹ 45, 698.70
c. ₹ 41, 698.70 d. ₹ 41, 698.70

Note: There is an error in options given in MTP as option c and d are same as a.

MTP May 19

(13) Y bought Motor Bike Costing 80,000 by making down payment of ₹ 30000 and agreeing to make annual payment for four years. How much would be each payment if the interest on unpaid amount be 14% compounded annually. [Given P (4, 0.14) = 2.91371]

a. ₹ 17160.25 b. ₹ 17600.25
c. ₹ 15600.25 d. ₹ 16600.25

MTP May 19 Series II

(14) A machine costs ₹ 1,00, 000. The depreciation rate is 10% per annum. The scrap value of the machine at the end of 5 years is

a. ₹ 49490 b. ₹ 59049
c. ₹ 61029 d. ₹ 51049

MTP May 19 Series II

(15) X bought a TV costing 25,000 making down payment of ₹ 5000 and agreeing to make equal annual payment for four years. How much would be each payment if the interest on unpaid amount be 14% compounded annually? [P(4, 0.14) = 2.91371]

a. ₹ 6864.10 b. ₹ 6850.63
c. ₹ 6859 d. ₹ 6871

MTP May 19 Series II

(16) The future value of annuity on ₹ 5000 a year for 7 years at 14% per annum compound interest is given $(1.14)^7 = 2.5023$

a. ₹ 5300 b. ₹ 53653.57
c. ₹ 5480 d. ₹ 5465.23

MTP May 19 Series II

(17) ₹ 5000 paid for ten years to off a loan. What is the loan amount if interest rate be 14% per annum compounded annually? (Given P (10, 0.14) = 5.21611

a. ₹ 26080.55 b. ₹ 26580.55
c. ₹ 26280.55 d. ₹ 27080.55

Note: Option b is wrong as given in MTP, correct answer is option a.

MTP May 19 Series II

(18) Suppose your friend decided gift to you ₹ 10000 every year starting from today for the next five years. Your deposit this amount in a bank as and when you receive and get 10% per annum interest compounded annually. What is the present value of this annuity?

a. Rs. 42698.70 b. Rs. 43698.70
c. Rs. 45698.70 d. Rs. 41698.70

MTP May 19 Series II

(19) ₹ 1000 is invested at the end of each month in an account paying interest 6% per year compounded monthly. What is the future value of annuity after 10th payment? (Given that $(1.005)^{10} = 1.0511$)

a. ₹ 10220 b. ₹ 1022
c. ₹ 20000 d. ₹ 1020

MTP Nov 19

(20) Anil bought a motor cycle costing ₹ 1,30,000 by making a down payment of ₹ 30,000 and agreeing to make equal annual payment for five years. How much would be each payment if the interest on unpaid amount be 10% compounded annually? [P (5, 0.10) = 3.7908].

a. ₹ 28379.70 b. ₹ 26300.70
c. ₹ 26500.70 d. ₹ 26379.70

MTP Nov 19

(21) Shoba borrows ₹ 50,00,000 to buy a house. If he pays equal instalments for 20 years and 10% interest on outstanding balance, what will be the equal annual instalment? [Given: $P(20,0.10) = 8.51356$].

a. ₹ 687298.4 b. ₹ 685298.4
c. ₹ 585298.4 d. ₹ 587298.4

MTP Nov 19

(22) An overdraft of ₹ 50,000 to be paid back in equal annual installments over a period of 20 years. Find the value of Installment, if interest is compounded annually at 14% per annum. [Given $(1.14)^{20} = 13.74349$]

a. ₹ 550.50 b. 549.30
c. ₹ 559.50 d. ₹ 560.50

Note: Options are wrong, may be they have missed first digit 7 in all options. Correct Ans is 7549.3

MTP May 20

(23) The present value of an annuity of ₹ 80 for 20 years at 5% p.a is [Given $(1.05)^{20} = 2.6533$]

a. ₹ 997 (appx.) b. ₹ 900
c. ₹ 1,000 d. none of these

MTP May 20, ICAI SM

(24) A person bought a house paying ₹ 20,000 cash down and ₹ 4,000 at the end of each year for 25 yrs. at 5% p.a. C.I. The cash down price is[Given $(1.05)^{25} = 3.386355$]

a. ₹ 75,000 b. ₹ 76,000
c. ₹ 76,375.80 d. none of these.

MTP May 20, ICAI SM

(25) A man purchased a house valued at ₹ 3,00,000. He paid ₹ 2,00,000 at the time of purchase and agreed to pay the balance with interest at 12% per annum compounded half yearly in 20 equal half yearly instalments. If the first instalment is paid after six months from the date of purchase then the amount of each instalment is.

a. ₹ 8,718.45 b. ₹ 8,769.21
c. ₹ 7,893.13 d. none of these

MTP May 20, ICAI SM

(26) A person invests ₹ 500 at the end of each year with a bank which pays interest at 10% p.a C.I. annually. The amount standing to his credit one year after he has made his yearly investment for the 12th time is. [Given $(1.1)^{12} = 3.1384$]

a. ₹ 11,761.36 b. ₹ 10,000
c. ₹ 12,000 d. none of these

MTP May 20

(27) The present value of ₹ 10,000 due in 2 years at 5% p.a. compound interest when the interest is paid on half-yearly basis is

a. ₹ 9,070 b. ₹ 9,070
c. ₹ 9,060 d. none of these

MTP Nov 20

(28) Find the present value of ₹ 10,000 to be required after 5 years, if the interest rate be 9 per cent compounded annually.

a. ₹ 5500
b. ₹ 5600
c. ₹ 6000
d. ₹ 6500

MTP Nov 20

(29) A man borrows ₹ 4000 from a bank at 10% compound interest. At the end of every year ₹ ☆ 1,500 as part of repayment of loan and interest. How much is still owe to the bank after three such installments.

a. ₹ 359
b. ₹ 820
c. ₹ 724
d. ₹ 720

MTP Nov 20

(30) The future value of annuity of ₹ 1,000, made annually for 5 years at the interest of 14% compounded annually is (Given $(1.14)^5 = 1.925410$)

a. ₹ 5610
b. ₹ 6610
c. ₹ 6160
d. ₹ 6160

MTP March 21

(31) Future value of an ordinary annuity

a. $A(n,i) = A\left[\frac{(1+i)^n - 1}{i}\right]$

b. $A(n,i) = A\left[\frac{(1+i)^n + 1}{i}\right]$

c. $A(n,i) = A\left[\frac{1-(1+i)^n}{i}\right]$

d. $A(n,i) = A\left[\frac{(1+i)^n - 1}{i(1+i)^n}\right]$

MTP March 21

(32) Anil bought a motor cycle costing ₹ 1,50,000 by making a down payment of ₹ 50, 000 and agreeing to make equal annual payment for five years. How much would be each payment if the interest on unpaid amounts be 10% compounded annually? [P (5, 0.10) = 3.7908]

a. ₹ 26379.66 b. ₹ 26300.70
c. ₹ 26500.70 d. ₹ 26370.70

MTP March 21

(33) Shoba borrows ₹ 50,00,000 to buy a house. If he pays equal instalments for 20 years and 10% interest on outstanding balance, what will be the equal annual instalment? [Given : P(20,0.10) =8.51356]

a. ₹ 687298.4 b. ₹ 685298.4
c. ₹ 585298.4 d. ₹ 587298.4

Note: Repeat

MTP March 21

(34) How much money is to be invested every year so to accumulate ₹ 3,00,000 at the end of 10 years if interest is compounded annually at 10% [A (10,0.1) = 15.9374)

a. ₹ 18823.65 b. ₹ 18833.64
c. ₹ 18223.60 d. ₹ 16823.65

MTP Jun 23 Series I

(35) Find the present value of an ordinary annuity of 8 quarterly payments of ₹ 500 each, the rate of interest being 8% p.a. compound quarterly

a. 4275.00 b. 4725.00
c. 3662.50 d. 3266.50

MTP Jun 23 Series I

(36) How much amount is required to be invested every year so as to accumulate ₹ 5,00,000 at the end of 12 years if interest is compounded annually at 10% (Where A (12,0.1) = 3.1384284)

a. ₹ 23381.65 b. ₹ 24385.85
c. ₹ 26381.65 d. ₹ 28362.75

MTP Jun 23 Series I

(37) Raju invests ₹ 20,000 every year in a deposit scheme starting from today for next 12 years. Assuming that interest rate on this deposit is 7% per annum compounded annually. What will be the future value of this annuity? Given that $(1+0.07)^{12} = 2.25219150$

a. ₹ 540,576 b. ₹ 382,813
c. ₹ 643,483 d. ₹ 357,769

MTP Jun 23 Series I

(38) Mr. A invested ₹ 20,000 every year for next 3 years at the interest rate of 8 percent per annum compounded annually. What is future value of the annuity?

a. 62644 b. 62464
c. 64928 d. 63442

MTP Jun 23 Series I

(39) ₹ 10,000 is invested every month and in an account paying interest @12% per annum compounded monthly. What is the future value of this annuity just after making 11th payment (Given that $(1.01)^{11} = 1.1156$)

a. ₹ 115,600 b. ₹ 156,100
c. ₹ 156,800 d. ₹ 157,100

MTP Jun 23 Series I

(40) Sinking fund factor is the reciprocal of:

a. Present value interest factor of a single cash flow
b. Present value interest factor of an annuity
c. Future value interest factor of an annuity
d. Future value interest factor of a single cash flow.

MTP Jun 23 Series II

(41) Find the present value of an annuity which pays ₹ 200 at the end of each 3 months for 10 years assuming money to be worth 5% converted quarterly?

a. ₹ 3473.86 b. ₹ 3108.60
c. ₹ 6265.38 d. None of these

MTP Jun 23 Series II

(42) The amount of an annuity due consisting of 15 annual payments invested at 8% effective is ₹ 10,000. Find the size of each payment.

a. ₹ 873.86 b. ₹ 108.60
c. ₹ 341.01 d. None of these

MTP Jun 23 Series II

(43) The future value of an annuity of ₹ 5,000 is made annually for 8 years at interest rate of 9% compounded annually. (Given that $(1.09)^8 = 1.99256$)

a. ₹ 55,142.22 b. ₹ 65, 142.22
c. ₹ 65,532.22 d. ₹ 57,425.22

MTP Jun 23 Series II

(44) Paul borrows ₹ 20,000 on condition to repay it with compound interest at 5% p.a. in annual instalment of ₹ 2,000 each. Find the number of years in which the debt would be paid off.

a. 10 years b. 12 years
c. 14 years d. 15 years

Answer Key

1 a	2 a	3 a
4 c	5 c	6 a
7 b	8 a	9 a
10 a	11 c	12 a
13 a	14 b	15 a
16 b	17 b	18 d
19 a	20 d	21 d
22 b	23 a	24 c
25 a	26 a	27 c
28 d	29 a	30 b
31 a	32 a	33 d
34 a	35 c	36 a
37 b	38 b	39 a
40 c	41 c	42 c
43 a	44 c	

Application of Time Value and Other Concepts

Past Year Questions

PYQ June 19

(1) A person wants to lease out a machine costing ₹ 5,00,000 for a 10 year period. It has fixed a rental of ₹ 51,272 per annum payable annually starting from the end of first year. Suppose rate of interest is 10% per annum compounded annually on which money can be invested. To whom this agreement is favourable?

a. Favour of Lessee
b. Favour of Lessor
c. Not for both
d. Can't be determined

PYQ June 21

(2) ABC Ltd. Wants to lease out an asset costing ₹3,60,000 for a five year period. It has a fixed rental of ₹ 1,05,000, per annum payable annually starting from the end of first year. Suppose rate of interest is 14% per annum compounded annually on which money can be invested by the company. Is this agreement favourable to the company.

a. Yes b. No
c. It depends d. None of these

PYQ Nov. 18

(3) What is the net present value of piece of property which would be valued at ₹ 2 lakh at the end of 2 years? (Annual rate of increase = 5%)

a. ₹ 1.81 lakh b. ₹ 2.01 lakh
c. ₹ 2.00 lakh d. None of these

PYQ June 19

(4) Determine the present value of perpetuity of ₹ 50,000 per month @ rate of interest 12% p.a. is

a. ₹ 45,00,000 b. ₹ 50,00,000
c. ₹ 55,00,000 d. ₹ 60,00,000

PYQ Nov. 20

(5) ☆ A stock pays annually an amount of ₹ 10 from 6th year onwards. What is the present value of the perpetuity, if the rate of return is 20%?

a. 20.1 b. 19.1
c. 21.1 d. 22.1

PYQ Jan. 21

(6) Assuming that the discount rate is 7% p.a. how much would pay to receive ₹ 200 growing at 5% annually for ever?

a. ₹ 2,500 b. ₹ 5,000
c. ₹ 7,500 d. ₹ 10,000

PYQ July 21

(7) If discount rate is 14% per annum, then how much a company has to pay to receive ₹ 280 growing at 9% annually forever?

a. ₹ 5,600 b. ₹ 2,800
c. ₹ 1,400 d. ₹ 4,200

PYQ July 21

(8) If the nominal rate of growth is 17% and inflation is 9% for the five years. Let P be the Gross Domestic Product (GDP) amount at the present year then the projected real GDP after 6 years is:

a. 1.587 P b. 1.921 P
c. 1.403 P d. 2.51 P

PYQ July 21

(9) If a person bought a house by paying ₹ 45,00,000 down payment and ₹ 80,000 at the end of each year till the perpetuity. Assuming the rate of interest as 16% the present value of house (in ₹) is given as:

a. 47,00,000 b. 45,00,000
c. 57,80,000 d. 50,00,000

PYQ July 21

(10) Let the operating profit of a manufacturer for five years is given as:

Years	Operating profit (in lakh ₹)
1	90
2	100
3	106.4
4	107.14
5	120.24
6	157.34

Then the operating profit of Compound Annual Growth Rate (CAGR) for year 6 with respect to year 2 is given that:

a. 9% b. 12%
c. 11% d. 13%

PYQ July 21

(11) If the cost of capital be 12% per annual, then the net present value (in nearest ₹) from the given cash flow is given as:

Years	Operating profit (in thousands ₹)
0	-100
1	60
2	40
3	50

a. 31048 b. 34185
c. 21048 d. 24187

PYQ June 22

(12) Assuming that the discount rate is 7% P.A. How much would you pay to receive ₹ 200, growing at 5% annually for ever?

a. ₹ 2,500 b. ₹ 5,000
c. ₹ 7,500 d. ₹ 10,000

PYQ June 22

(13) The CAGR of a initial value of a investment of ₹ 15,000 and final value of ₹ 25,000 in 3 years is:

a. 19% b. 18.56%
c. 17.56% d. 17%

PYQ Jun 23

(14) Ms. Paul invested ₹ 1,00,000 in a mutual fund scheme in January 2018. After one year in January 2019, she got a dividend amounting to ₹ 10,000 for first year, ₹ 12,000 for second year, ₹ 16,000 for third year, ₹ 18,000 for fourth year and ₹ 21,000 for fifth year in January 2023. What is Compounded Annual Growth Rate (CAGR) of dividend return? Given $1.2038^4 = 2.1$.

a. 20.38% b. 18.59%
c. 16.36% d. 15.89%

PYQ Jun 23

(15) If the discount rate is 10% per annum, how much amount would you pay to receive ₹ 2,500 growing at 8%, annually forever?

a. ₹ 1,25,000 b. ₹ 2,50,000
c. ₹ 1,50,000 d. ₹ 2,00,000

PYQ Jun 23

(16) Mr. Sharad got his retirement benefits amounting to ₹ 50,00,000. He want to receive a fixed monthly sum of amount for his rest of life, starting after one month and thereafter he want to pass on the same to future generation. He expects to earn an interest of 9% compounded annually. Determine how much perpetuity amount he will receive every month?

a. ₹ 39,500 b. ₹ 38,500
c. ₹ 37,500 d. ₹ 36,600

Answer Key

1 a	2 a	3 a
4 b	5 a	6 d
7 a	8 a	9 d
10 b	11 c	12 d
13 b	14 a	15 a
16 c		

Application of Time Value and Other Concepts

Mock Test Paper Questions

MTP May 19 Series II, ICAI SM

(1) A machine can be purchased for ₹ 50,000. Machine will be contributing ₹ 12,000 per year for the next five years. Assuming borrowing cost is 10% per annum. Determine whether machine should be purchased or not

a. Should be purchased
b. Should not be purchased
c. Can't say about purchase
d. none of the above

MTP Nov 19, ICAI SM

(2) A company is considering proposal of purchasing a machine either by making full payment of ₹ 4000 or by leasing it for four years at an annual rate of ₹ 1250. Which course of action is preferable if the company can borrow money at 14% compounded annually? [P (4,0.14) = 2.9137]

a. leasing is not preferable
b. leasing is preferable
c. cannot determined
d. none of these

MTP May 20, ICAI SM

(3) A person desires to create a fund to be invested at 10% CI per annum to provide for a prize of ₹ 300 every year. Using V = a/I find V and V will be

a. ₹ 2,000 b. ₹ 2,500
c. ₹ 3,000 d. none of these.

MTP Nov 20

(4) A company is considering proposal of purchasing a machine either by making full payment of ₹ 4,000 or by leasing it for 4 years at an annual rent of ₹ 1250. Which course of action is preferable? if the company can borrow money at 14 % per annum?

[Given: $(1.14)^4 = 1.6870$]

a. Leasing preferable
b. Leasing is not preferable
c. Can't say
d. None of these

MTP March 21

(5) A company is considering proposal of purchasing a machine either by making full payment of ₹ 4000 or by leasing it for four years at an annual rate of ₹ 1250. Which course of action is preferable if the company can borrow money at 14% compounded annually? [P (4,0.14) = 2.9137]

a. Leasing is not preferable
b. Leasing is preferable
c. Cannot be determined
d. None of these above.

MTP Apr 21

(6) A machine can be purchased for ₹ 50,000. Machine will contribute ₹ 12,000 per year for the next five years. Assume borrowing cost is 10% per annum. Determine whether machine should be purchased or not: (P(5,0.10) = 3.79079

a. Should be purchased
b. Should not be purchased
c. Can't say about purchase
d. none of the above

MTP Dec 2022 Series II

(7) A ₹1000 bond paying annual dividends at 8.5% will be redeemed at par at the end of 10 years. ☆ Find the purchase price of this bond if the investor wishes a yield rate of 8%

a. ₹ 907.135 b. ₹ 1033.54
c. ₹ 945.67 d. None of these

MTP May 18

(8) Nominal Rate of Return =

a. Real Rate of Return – Inflation
b. Real Rate of Return + Inflation
c. Real Rate of Return / Inflation
d. Real Rate of Return × Inflation

MTP May 18

(9) Net Present value ≥ 0, then

a. Accept the Proposal
b. Reject the proposal
c. Not Feasible
d. None of the above

MTP May 19

(10) Nominal Rate of Return =

a. Real Rate of Return – Inflation
b. Real Rate of Return + Inflation
c. Inflation -Real Rate of return
d. None of the above

MTP May 19

(11) Net Present Value (NPV)
a. Present value of net cash Inflow – Total net Investment
b. Present value of net cash Inflow – Present value of cash outflow
c. Total net Investment- Present value of net cash Inflow
d. a or b

MTP Nov 21

(12) If the cost of capital be 12% per annum, then the Net Present Value (in nearest Rs.) from the given cash flow is given as ₹ in thousands

Year	0	1	2	3
Operating profit	(100)	60	40	50

a. ₹ 34,048 b. ₹ 34,185
c. ₹ 51,048 d. ₹ 21,048

MTP Nov 21

(13) Find CAGR, if the operating profit of a manufacturer for five years is given as

☆

Yr.	1	2	3	4	5	6
OP	90	100	106.4	107.14	120.24	157.35

a. 9% b. 12%
c. 11% d. 13%

MTP Oct 21

(14) The nominal rate of growth is 17% and inflation is 9% for the five years. Let P be the Gross Domestic Product (GDP) amount at the present year then the projected real GDP after 6 years is
a. 1.587P b. 1.921 P
c. 1.403 P d. 2.51 P

MTP Oct 21

(15) A person desires to create a fund to be invested at 10% CI per annum to provide for a prize of ₹ 300 every year. Using V = a/I find V and V will be
a. ₹ 2,000 b. ₹ 2,500
c. ₹ 3,000 d. none of these

MTP June 22

(16) Determine the present value of perpetuity of ₹ 50,000 per month at the rate interest 12% per annum is
a. ₹ 45,00,000 b. ₹ 50,00,000
c. ₹ 55,00,000 d. ₹ 60,00,000

MTP Dec 22 – Series I

(17) Assuming that the discount rate is 7% p.a. How much would you pay to receive ₹ 500. Growing at 5% annually forever?
a. ₹ 2500 b. ₹ 5000
c. ₹ 7500 d. ₹ 25000

MTP Dec 22 – Series I

(18) Ravi made an investment of ₹ 15,000 in a scheme and at the time of maturity, the amount was ₹ 25,000. If the Compound Annual Growth Rate (CAGR) for this investment is 8.88%. Calculate the approximate number of years for which he has invested the amount.
a. 6 b. 7.7
c. 5.5 d. 7

MTP Jun 23 – Series I

(19) A machine with useful life of 7 years costs ₹ 10,000 while another machine with useful life of 5 years costs ₹ 8000. The first machine saves labour expenses of ₹ 1900 annually and the second one saves labour expenses of ₹ 2200 annually. Determine the preferred course of action. Assume cost of borrowing as 10% compounded per annum.
a. 1st machine should be purchased
b. 2nd machine should be purchased
c. Information is not sufficient
d. None of these

MTP Jun 23 – Series I

(20) 10 years ago the earning per share (EPS) of ABC Ltd. was ₹ 5 share its EPS for this year is ₹ 22. Compute at what rate, EPS of the company grow annually?
a. 15.97% b. 16.77%
c. 18.64% d. 14.79%

MTP Jun 23 – Series II

(21) A company is considering proposal of purchasing a machine full payment of ₹ 4000 or by leasing it for 4 years at an annual rate of ₹ 1250. Which course of action is preferable if the company can borrow money at 14% compounded annually?
a. Purchasing b. Leasing
c. Both are same d. None of these

MTP Jun 23 – Series II

(22) Find the purchase price of a ₹ 1000 bond redeemable all the paying annual dividends at 4% if the yield rate is to be 5% effective.

a. ₹ 884.16 b. ₹ 984.17

c. ₹ 1084.16 d. None of these

Answer Key

1	b	2	b	3	c
4	a	5	b	6	b
7	b	8	b	9	a
10	b	11	d	12	d
13	b	14	a	15	c
16	b	17	d	18	a
19	b	20	a	21	b
22	b				

Chapter 5: Permutations and Combinations

Permutations

Past Year Questions

PYQ Nov. 18

(1) The value of N in $\frac{1}{7!}+\frac{1}{8!}=\frac{N}{9!}$ is

a. 81 b. 78
c. 89 d. 64

PYQ Jan. 21

(2) There are ten flights operating between city A and city B. The number of ways in which a person can travel from city A to city B and return by different flight is:

a. 90 b. 95
c. 80 d. 78

PYQ July 21

(3) A person can go from place 'A' to 'B' by 11 different modes of transport but is allowed to return to 'A' by any mode other than the one earlier. The number of different ways in which the entire journey can be completed is:

a. 110 b. 10^{10}
c. 9^5 d. 10^9

PYQ June 22

(4) If a man travels from place A to B in 10 ways then by how many ways can he come back by another train?

a. 94 b. 110
c. 90 d. 99

PYQ June 22

(5) If $\frac{n!}{10}=\frac{(n-1)!}{(n-1-n+3)!}$, find 'n'.

a. 4 b. 5
c. 6 d. 7

PYQ June 19

(6) Which of the following is a correct statement.

☆ a. ${}^{n}p_{n}={}^{n}p_{n-1}$
b. ${}^{n}p_{n}={}^{2n}p_{n-2}$
c. ${}^{n}p_{n}={}^{3n}p_{n-3}$
d. ${}^{n}p_{n}={}^{n.(n-1)}p_{n-1}$

PYQ Nov. 19

(7) ${}^{n}P_{3}:{}^{n}P_{2}=2:1$. Find n.

a. 4 b. 7/2
c. 5 d. 2/7

PYQ Nov. 20

(8) If ${}^{n}p_{4}=20{}^{n}p_{2}$ where p denotes the number of permutations, then n is:

a. 4 b. 2
c. 5 d. 7

PYQ Jan. 21

(9) Eight chairs are numbered from 1 to 8. Two women and three men are to be seated by
☆ allowing one chair for each. First, the women choose the chairs from the chairs numbered 1 to 4 and then men select the chairs from the remaining. The number of possible arrangements is:

a. 120 b. 288
c. 32 d. 1440

PYQ July 21

(10) If ${}^{n}p_{6}=20{}^{n}p_{4}$ then the value of n is given by:

a. $n=5$ b. $n=3$
c. $n=9$ d. $n=8$

PYQ Dec. 21

(11) If ${}^{n}p_{2}=12$, then the value of n is

a. 2 b. 3
c. 4 d. 6

PYQ June 22

(12) 8 people are seated in a row in a meeting among them the president and vice president are to be
☆ seated always in the center. What is the arrangement?

a. 7!2! b. 6!2!
c. 6! d. 1!

PYQ Nov. 19

(13) How many numbers can be formed with the help of 2, 3, 4, 5, 6, 1 which are not divisible by 5,
☆ given that it is a five-digit no. and digits are not repeating?

a. 600 b. 400
c. 1200 d. 1400

PYQ Jan. 21

(14) How many four-digit odd numbers can be formed with digits 0, 1, 2, 3, 4, 7 and 8?

☆ a. 150 b. 300
c. 120 d. 210

PYQ July 21

(15) How many numbers of seven-digit numbers which can be formed from the digits 3, 4, 5, 6, 7, 8, 9 no digits being repeated are not divisible by 5?

a. 4320 b. 4690
c. 3900 d. 3890

PYQ Nov. 18

(16) The number of words from the letters of the word BHARAT, in which B and H will never come together, is

a. 360 b. 240
c. 120 d. None of these

PYQ Jan. 21

(17) In how many different ways can the letters of the word 'DETAIL' be arranged so that the vowels occupy only the odd positions?

a. 32 b. 36
c. 48 d. 60

PYQ Dec. 21

(18) The number of four-letter words can be formed using the letters of the word DECTIONARY is

a. 5040 b. 720
c. 90 d. 30240

PYQ Dec. 21

(19) The number of words that can be formed using the letters of the "PETROL" such that the words do not have "P" in the first position, is

a. 720 b. 120
c. 600 d. 540

PYQ Dec. 21

(20) The number of different ways the letters of the word "DETAIL" can be arranged in such a way that the vowels can occupy only the odd position is

a. 32 b. 36
c. 48 d. 60

PYQ June 22

(21) If four words are taken with or without meaning from the word 'LOGARITHAM' without repetition. How many words will be formed?

a. 5040 b. 2520
c. 120 d. 40320

PYQ July 21

(22) ☆ The number of ways 5 boys and 5 girls can be seated at a round table, so no two boys are adjacent is:

a. 2,550 b. 2,880
c. 625 d. 2,476

PYQ June 19

(23) In how many ways can the crew of an eight seated boat be arranged so that 3 of crew can row only on a stroke side and 2 row on the other side?

a. 1,728 b. 256
c. 164 d. 126

PYQ Nov. 19

(24) Three girls and five boys are to be seated in a row so that no two girls sit together. Total no. of ways of this arrangement are:

a. 14,400 b. 120
c. ${}^{5}p_{3}$ d. $3!\times 5!$

PYQ Nov. 19

(25) How many different groups of 3 people can be formed from a group of 5 people?

a. 5 b. 6
c. 10 d. 9

PYQ Jan. 21

(26) ☆ 'n' locks and 'n' corresponding keys are available, but the actual combination is not known. The maximum number of trials that are needed to assigns the keys to the corresponding locks is:

a. ${}^{(n-1)}C_2$ b. ${}^{(n+1)}C_2$
c. $\sum_{k=2}^{n}(k-1)$ d. $\sum_{k=2}^{n}k$

PYQ Dec. 21

(27) Six boys and five girls are to be seated for a photograph in a row such that no two girls sit together and no two boys sit together. Find the number of ways in which this can be done.

a. 74,200 b. 96,900
c. 45,990 d. 86,400

PYQ Dec. 22

(28) ☆ The number of ways 4 boys and 3 girls can be seated in a row so that they are alternate is:

a. 12 b. 288
c. 144 d. 256

PYQ Dec. 22

(29) ☆ How many 3 digit odd numbers can be formed using the digits 5, 6, 7, 8, 9 if the digits can be repeated?

a. 55 b. 75
c. 65 d. 85

PYQ Jun 23

(30) If ${}^{6}P_{2r} = 12 \times {}^{6}P_{r}$ then r is equal to

a. 1 b. 2
c. 3 d. 4

PYQ Jun 23

(31) In how many different ways can the letters of the word 'SOFTWARE' be arranged so that the vowels always come together?

a. 720 b. 1440
c. 2880 d. 4320

Answer Key

1 a	2 a	3 a
4 c	5 b	6 a
7 a	8 d	9 d
10 c	11 c	12 b
13 a	14 b	15 a
16 b	17 b	18 a
19 c	20 b	21 a
22 b	23 a	24 a
25 c	26 b	27 d
28 c	29 b	30 b
31 d		

Permutations

Mock Test Paper Questions

MTP Oct 21

(1) Find the value of n if $(n+1)! = 42\,(n-1)!$

a. 6 b. - 7
c. 7 d. - 6

MTP May 19

(2) If ${}^{n}P_{r} = 336$ and ${}^{n}C_{r} = 56$, then n and r will be

a. (3,2) b. (8, 3)
c. (7, 4) d. none of these

MTP Nov 18

(3) In a lawn different ways can four persons stand in a line for a group photograph

a. 24 b. 16
c. 8 d. 64

MTP May 19

(4) ${}^{n}P_{r} = 720$ and ${}^{n}C_{r} = 120$ then value of r is

a. 4 b. 5
c. 3 d. 6

MTP May 19 Series II

(5) If ${}^{n}P_{4} = 12\,{}^{n}P_{2}$, then n =

a. 2 b. 3
c. 4 d. 6

MTP Oct 21

(6) If ${}^{n}P_{13} : {}^{n+1}P_{12} = 3:4$, then value of n is

a. 15 b. 14
c. 13 d. 12

MTP March 22

(7) If ${}^{n}P_{2} = 20\,{}^{n}P_{2}$ then the value of 'n' is _____

a. -2 b. 7
c. -2 and 7 both d. none of these.

Note: Given expression is incorrect, correct one should be ${}^{n}P_{4} = 20\,{}^{n}P_{2}$

MTP Dec 22 Series II

(8) ${}^{n}P_{3} : {}^{n}P_{2} = 2:1$

a. 4 b. 7/2
c. 5 d. 2/7

MTP June 22

(9) How many Six-digit telephone numbers can be formed by using 10 distinct digits

☆ a. 10^{6} b. 6^{10}
c. ${}^{10}C_{9}$ d. ${}^{10}C_{6}$

MTP Dec 22 Series II

(10) The Sum of all the 4 digits numbers that can be formed with the digits 3,4,5,5 is

☆ a. 18887 b. 33333
c. 38887 d. 56661

MTP June 22

(11) Find the number of even numbers greater than 100 that can be formed with the digits 0,1,2,3?

☆ a. 10 b. 15
c. 20 d. none of these

MTP Dec 22 Series II, PYQ Nov 19

(12) How many numbers can be formed with the help of 2, 3, 4, 5, 6, 1 which is not divisible by 5, given that it is a five-digit number and digits are not repeating?

a. 1200 b. 400
c. 600 d. 1400

MTP May 18

(13) If two letters are taken at random from the word HOME, what is the Probability that none of the letters would be vowels?

a. 1/6 b. 1/2
c. 1/3 d. 1/4

Note: From Probability Chapter

MTP May 18

(14) In how many ways the letters of the word 'ARRANGE' be arranged?

a. 1200 b. 1250
c. 1260 d. 1300

MTP Nov 19

(15) In how many ways can the letters of the word 'STRANGE' be arranged so that the vowels never come together?

a. 3600 b. 3686
c. 5040 d. 4050

MTP May 20

(16) The number of ways the letters of the word 'COMPUTER' can be rearranged is

a. 40,320 b. 40,319
c. 40,318 d. none of these

MTP Nov 20

(17) How many ways can be letters of the word "FAILURE' be arranged so that the consonants may occupy only odd places?

a. 576 b. 476
c. 376 d. 276

MTP March 21

(18) In how many ways can the letters of the word FAILURE be arranged so that the consonants may occupy only odd positions?

a. 576 b. 476
c. 376 d. 276

MTP Nov 21

(19) The number of words that can be formed out of the letters of the word "ARTICLE" so that vowels occupy even places is

a. 36 b. 144
c. 574 d. 754

MTP Nov 21

(20) A box contains 3 pink caps, 2 purple caps and 4 orange caps. In how many ways they can be arranged so that the caps of the same colour come together. (Assume all caps of same colour are not identical)

a. 1724 b. 1728
c. 1732 d. 1764

MTP March 22

(21) How many different words can be formed with the letters of the word "LIBERTY"

a. 4050 b. 5040
c. 5400 d. 4500

MTP March 22

(22) The number of ways of arranging 6 boys and 4 girls in a row so that all 4 girls are together is:

a. 6!.4! b. 2 (7! 4!)
c. 7! 4! d. 2. (6! 4!)

MTP June 22

(23) In how many ways can the letters of the word "ALEGEBRA" be arranged without changing ☆ the relative order of the vowels?

a. 82 b. 70
c. 72 d. None of these

Note: Correct word should be ALGEBRA

MTP June 22

(24) In how many ways can the letters of the word "DIRECTOR" be arranged so that the three ☆ vowels are never together?

a. 180 b. 18,000
c. 18,002 d. none of these

MTP Dec 22 – Series I

(25) How many words can be formed with the letters of the word 'ORIENTAL' So that A and E always occupy odd places:

a. 540 b. 8460
c. 8640 d. 8450

MTP Dec 22 – Series I

(26) In how many ways can a party of 4 men and 4 women be seated at a circular table, so that no two women are adjacent?

a. 164 b. 174
c. 144 d. 154

MTP May 19

(27) The number of ways in which 8 examination papers be arranged so that the best and worst papers never come together

a. $8! - 2 \times 7!$ b. $8! - 7!$
c. $8!$ d. $7!$

MTP May 20

(28) 5 persons are sitting in a round table in such way that Tallest Person is always on the right-side of the shortest person; the number of such arrangements is

a. 6 b. 8
c. 24 d. none of these

MTP May 20

(29) An examination paper with 10 questions consists of 6 questions in Algebra and 4questions in Geometry. At least one question from each section is to be attempted. In how many ways can this be done?

a. 945 b. 100
c. 1000 d. none of these

MTP May 20

(30) If 12 school teams are participating in a quiz contest, then the number of ways the first, second and third positions may be won is

a. 1,230 b. 1,320
c. 3,210 d. none of these

MTP Oct 21

(31) ☆ A question paper contains 6 questions, each having an alternative. The number of ways an examiner can answer one or more questions is

a. 720 b. 728
c. 729 d. none of these

MTP Jun 23 – Series I

(32) The number of ways of 4 boys and 3 girls are to be seated for a photograph in a row alternatively.

a. 24 b. 164
c. 144 d. 336

MTP Jun 23 – Series I

(33) The number of 3-digit odd numbers can be formed using the digits 5,6,7,8,9. If repetition is allowed?

a. 56 b. 75
c. 95 d. 45

MTP Jun 23 – Series II

(34) How many numbers of 3 digits can be made by using digits 3, 5, 6, 7 and 8 no. digit being repeated.

a. 120 b. 60
c. 100 d. None of these

MTP Jun 23 – Series II

(35) In how many ways of the word "MATHEMATICS" be arranged so that the vowels always occur together?

a. $11!(2!)^3$ b. $(81\times4!)\div(2!)^3$
c. $12!\div(2!)^3$ d. None of these

Answer Key

1	a	2	b	3	a
4	c	5	d	6	a
7	b	8	a	9	a
10	d	11	c	12	c
13	a	14	c	15	a
16	b	17	a	18	a
19	b	20	b	21	b
22	c	23	c	24	b
25	c	26	c	27	a
28	a	29	a	30	b
31	b	32	c	33	b
34	b	35	b		

Combinations

Past Year Questions

PYQ Nov. 18

(1) A bag contains 4 red, 3 black and 2 white balls. In how many ways 3 balls can be drawn from this bag so that they include at least one black ball?

a. 64 b. 46
c. 85 d. None of these

PYQ Nov. 18

(2) If ${}^nP_r = 720$ and ${}^nC_r = 120$, then r is

a. 3 b. 4
c. 5 d. 6

PYQ June 19

(3) If these are 40 guests in a party. If each guest takes a shake hand with all the remaining guests. Then the total number of hands shake is _____:

a. 780 b. 840
c. 1,560 d. 1,600

PYQ Nov. 19

(4) In how many ways can 4 people be selected at random from 6 boys and 4 girls if there are to be exactly 2 girls?

a. 90 b. 360
c. 92 d. 480

PYQ Nov. 20

(5) A fruity basket contains 7 apples, 6 bananas, and 4 mangoes. How many selections of 3 fruits can be made so that all 3 are apples?

a. 35 ways b. 120 ways
c. 165 ways d. 70 ways

PYQ Nov. 20

(6) Out of 7 boys and 4 girls, a team of a debate club of 5 is to be chosen. The number of teams such that each team includes at least one girl is:

a. 439 b. 429
c. 419 d. 441

PYQ Nov. 20

(7) From a group of 8 men and 4 women, 4 persons are to be selected to form a committee so that at least 2 women are there on the committee. In how many ways can it be done?

a. 168 b. 201
c. 202 d. 220

PYQ Jan. 21

(8) A business houses wishes to simultaneously elevate two of its six branch heads. In how many ways can these elevations take place?

a. 12 b. 3
c. 6 d. 15

PYQ June 22

(9) 7 boys and 4 girls from which a team of 5 is to be selected, each team should have atleast one girl is:

a. 429 b. 439
c. 419 d. 441

PYQ May 18

(10) If ${}^{1000}C_{96} = {}^{999}C_{97} + {}^{X}C_{901}$, find x:

a. 999 b. 998
c. 997 d. 1,000

PYQ June 19

(11) If ${}^{11}C_x = {}^{11}C_{2x-4}$ and $x \neq 4$ than the value of ${}^{7}C_x =$

a. 20 b. 21
c. 22 d. 23

PYQ Jan. 21

(12) ${}^{n}C_p + 2{}^{n}C_{p-1} + {}^{n}C_{p-2} = ?$

☆ a. ${}^{n+}C_p$ b. ${}^{n+2}C_p$
c. ${}^{n+1}C_{p+1}$ d. ${}^{n+2}C_{p-1}$

PYQ June 22

(13) If ${}^{11}C_x = {}^{11}C_{2x-4}$ and $x \neq 4$, then value of ${}^{7}C_x$

a. 20 b. 21
c. 22 d. 23

PYQ June 22

(14) There are 5 questions each have four options. Then in how many different ways can we answer the questions?

a. 20 b. 120
c. 1024 d. 60

PYQ May 18

(15) The number of triangle that can be formed by choosing the vertices from a set of 12 points, seven of which lie on the same straight line, is:

a. 185 b. 175
c. 115 d. 105

PYQ June 22

(16) If there are 6 points in a line and 4 points in another line. Find the number of parallelogram formed?

a. 80 b. 70
c. 90 d. 100

PYQ Dec 22

(17) There are 20 points in a plane area. How many triangles can be formed by these points if 5 points are collinear?

a. 550 b. 560
c. 1130 d. 1140

PYQ Dec 22

(18) If ${}^{n}P_r = 3024$ and ${}^{n}C_r = 126$, then find n and r?

a. 9, 4 b. 10, 3
c. 12, 4 d. 11, 4

PYQ Jun 23

(19) A committee of 3 women and 4 men is to be formed out of 8 women and 7 men. Mrs. Kajal refuses to serve in a committee in which Mr. Yash is a member. The number of such committees can be:

a. 1530 b. 1500
c. 1520 d. 1540

PYQ Jun 23

(20) In the next world cup of cricket, there will be 12 teams divided equally into two equal groups. Team of each group will play a match against other teams of the group. From each group, 3 top teams will qualify for next round. In this round, each team will play against each other. Four top teams of this round will qualify for semi-finals and play against each other and then two top teams will go to final, where they play the best of three matches. How much minimum number of matches in the next world cup will be?

a. 54 b. 53
c. 38 d. 43

Answer Key

1 a	2 a	3 a
4 a	5 a	6 d
7 b	8 d	9 d
10 a	11 b	12 b
13 b	14 c	15 a
16 c	17 c	18 a
19 d	20 b	

Combinations

Mock Test Paper Questions

MTP May 18

(1) In how many ways 3 prizes out of 5 can be distributed amongst 3 brothers equally

☆ a. 10 b. 45
c. 60 d. 120

MTP Nov 18

(2) A Company wishes top simultaneously promotes three of its 8 department assistant mangers. In how many ways these promotions can take place?

a. 336 b. 56
c. 8 d. 1680

MTP May 19

(3) If ${}^nP_r = 336$ and ${}^nC_r = 56$, then n and r will be

a. (3, 2) b. (8, 3)
c. (7, 4) d. None

MTP May 19

(4) ${}^nP_r = 720$ and ${}^nC_r = 120$ then value of r is

a. 4 b. 5
c. 3 d. 6

MTP Nov 19

(5) In how many ways can a committee of 3 ladies and four gents be chosen from 8 ladies and 7 gents?

a. 1950 b. 1920
c. 1940 d. 1960

MTP Nov 19

(6) A box contains 7 red, 6 white and 4 blue balls. How many selections of three balls on of each colour?

a. 178 b. 158
c. 198 d. 168

MTP Nov 21

(7) ${}^{15}C_3 + {}^{15}C_{13}$ is equal to:

a. ${}^{16}C_3$ b. ${}^{30}C_{16}$
c. ${}^{15}C_8$ d. ${}^{15}C_{15}$

MTP Nov 21

(8) In how many ways 3 Prizes can be distributed among 3 students equally

a. 10 b. 45
c. 60 d. 120

Note: Que is incomplete in MTP – refer MTP May 18 for similar complete question

MTP Oct 21

(9) ${}^5C_1 + {}^5C_2 + {}^5C_3 + {}^5C_4 + {}^5C_5$ is equal to _____

a. 30 b. 31
c. 32 d. 35

MTP March 22

(10) ${}^{15}C_3 + {}^{15}C_{r+3}$ then 'r' is equal to

a. 2 b. 3
c. 4 d. 5

Note: Que mistake in this MTP refer MTP May 18 que for similar complete que. ${}^{15}C_{3r} = {}^{15}C_{r+3}$

MTP June 22

(11) The number ways in which 4 persons can occupy 9 vacant seats is

a. 6048 b. 3024
c. 1512 d. 4536

MTP Dec 22 Series II

(12) How many different groups of 3 people can be formed from a group of 5 people?

a. 5 b. 6
c. 10 d. 9

MTP Dec 22 Series II

(13) In how many ways can 4 people be selected at random from 6 boys and 4 girls if there are exactly two girls?
a. 90 b. 360
c. 92 d. 480

MTP May 18

(14) $15C_{3r} = 15C_{r+3}$, then r is equal to
a. 2 b. 3
c. 4 d. 5

MTP May 18

(15) In an examination a candidate has to pass in each of the 4 papers. In how many different ☆ ways can be failed?
a. 14 b. 16
c. 15 d. None

MTP March 21

(16) An examination paper consists of 12 questions divided into two parts A and B. Part A contains ☆ 7 questions and Part B contains 5 questions. A candidate is required to attempt 8 questions selecting at least 3 from each part, in how many maximum ways can the candidate select the questions?
a. 35 b. 175
c. 210 d. 420

MTP March 21

(17) Find the number of combinations of the letters of the word COLLEGE taken four together:
☆ a. 18 b. 16
c. 20 d. 26

MTP Apr 21

(18) The Supreme Court Bench consists of 5 judges. In how many ways, the bench can give a majority decision?
a. 10 b. 5
c. 15 d. 16

MTP May 18

(19) There 12 questions to be answered to be Yes or No. How Many ways this can be answered
a. 1021 b. 2048
c. 4096 d. None of these

MTP May 18

(20) ${}^nC_1 + {}^nC_2 + {}^nC_3 + {}^nC_4 + \ldots$
a. $2^n - 1$ b. 2^n
c. $2^n + 1$ d. None

MTP May 19 II

(21) A man has 5 friends'. In how many ways can be invite one or more of his friends to dinner?
a. 30 b. 31
c. 32 d. 10

MTP Mar 21, MTP Apr 21

(22) An examination paper consists of 12 questions divided into two parts A and B. Part A contains 7 questions and Part B contains 5 questions. A candidate is required to attempt 8 questions selecting at least 3 from each part, in how many maximum ways can the candidate select the questions?
a. 35 b. 175
c. 210 d. 420

MTP May 18, MTP Nov 21

(23) Tere are 12 questions to be answered in Yes or No. How many ways can these be answered?
a. 1024 b. 2048
c. 4096 d. None

MTP Nov 20

(24) A polygon has 14 diagonals then the number of sides are
☆ a. 6 b. 7
c. 8 d. 9

MTP Nov 18

(25) There are 12 points in a plane which are collinear no three points is a straight lie, number of triangular that can be formed with the vertices as there points are:
a. 216 b. 220
c. 110 d. 108

Note: Que is incomplete in MTP – there should be 4 collinear points.

MTP Nov 19

(26) The number of diagonals in a polygon of 6 sides
a. 9 b. 8
c. 6 d. 12

MTP Nov 20

(27) The number of triangles that can be formed by choosing the vertices from set of 12 points, seven of which lie on the same straight line is
a. 185 b. 175
c. 115 d. 105

MTP March 21

(28) The number of triangles that can be formed by choosing the vertices from a set of 12 points, seven of which lie on the same straight line, is:

a. 185 b. 175
c. 115 d. 105

MTP Dec 22 – Series I

(29) The number of triangles that can be formed by choosing the vertices from a set of 12 points, Seven of which lie on the same lie on the same straight line is:

a. 185 b. 175
c. 115 d. 105

MTP March 22

(30) Number ways of painting of a face of a cube by 6 colours is

a. 30 b. 6
c. 24 d. 20

MTP Apr 21

(31) ☆ A boy has 3 library tickets and 8 books of his interest in the library of these 8, he does not want to borrow mathematics part II unless mathematics part-1 is also borrowed? In how many ways can he choose the three books to be borrowed?

a. 41 b. 51
c. 61 d. 71

MTP March 22

(32) ☆ X and Y stand in a line with 6 other people. What is the probability that there are 3 persons between them?

a. 1/5 b. 1/6
c. 1/7 d. 1/3

Note: Que from Probability

MTP Dec 22 – Series I

(33) ☆ The number of ways of painting the faces of a cube by 6 different colors is

a. 30 b. 36
c. 24 d. 1

Note: Repeat MTP Mar 22

MTP June 2023 Series I

(34) If there are 30 points in a plane of which 5 points are lies on the same line. Then the number of triangles can be formed?

a. 650 b. 580
c. 4050 d. 4060

MTP June 2023 Series I

(35) The value n, r if ${}^{n}p_{r} = 3024$ and ${}^{n}c_{r} = 126$

a. 9, 4 b. 10, 7
c. 12, 5 d. 11, 6

MTP June 2023 Series II

(36) If ${}^{20}C_{r} = {}^{20}C_{r+6}$. Then the value of r is

a. 10 b. 7
c. 11 d. None of these

Answer Key

1	c	2	b	3	b
4	c	5	d	6	d
7	a	8	c	9	b
10	b	11	b	12	c
13	a	14	b	15	c
16	d	17	a	18	d
19	c	20	a	21	b
22	d	23	c	24	b
25	a	26	a	27	a
28	a	29	a	30	a
31	a	32	c	33	a
34	c	35	a	36	b

Chapter 6 – Sequence and Series

Arithmetic Progression AP

Past Year Questions

PYQ May 18

(1) A person pays ₹ 975 in monthly instalments, each instalment is less than formed by ₹ 5. The amount of 1st instalment is ₹ 100. In what time will the entire amount be paid?

a. 26 months b. 15 months
c. Both (a) & (b) d. 18 months

PYQ May 18

(2) If the sum of n terms of an AP is $(3n^2 - n)$ and its common difference is 6, then its first term is:

a. 3 b. 2
c. 4 d. 1

PYQ May 18

(3) Insert two arithmetic means between 68 and 260.

a. 132, 196 b. 130, 194
c. 70, 258 d. None of these

PYQ Nov 18

(4) If the p^{th} term of an A.P. is 'q' and the q^{th} term is 'p', then its r^{th} term is

a. $p + q - r$ b. $p + q + r$
c. $p - q - r$ d. $p - q$

PYQ Nov 18

(5) The sum of the series - 8, - 6, - 4,.....n terms is 52. The number of terms n is

a. 11 b. 12
c. 13 d. 10

PYQ Nov 18

(6) The value of K, for which the terms $7K + 3$, $4K - 5$, $2K + 10$ are in A.P., is

a. 13 b. - 13
c. 23 d. - 23

PYQ June 19

(7) ☆ If the ratio of sum of n terms of two APs is $(n + 1) : (n - 1)$, then the ratio of their m^{th} terms is:

a. $(m + 1) : 2m$
b. $(m + 1) : (m - 1)$
c. $(2m - 1) : (m + 1)$
d. $m : (m - 1)$

Note: Extra Lengthy Solution.

PYQ June 19

(8) If $2 + 6 + 10 + 14 + 18 + \ldots\ldots\ldots\ldots + x = 882$ then the value of x

☆ a. 78 b. 80
c. 82 d. 86

PYQ Nov. 19

(9) If the sum of five terms of AP is 75. Find the third term of the series

a. 35 b. 30
c. 15 d. 20

PYQ Nov. 20

(10) The 20^{th} term of arithmetic progression whose 6^{th} term is 38 and 10^{th} term is 66 is:

a. 118 b. 136
c. 178 d. 210

PYQ Nov. 20

(11) Divide 69 into 3 parts which are in A.P. and are such that the product of first two parts is 460:

a. 20, 23, 26 b. 21, 23, 25
c. 19, 23, 27 d. 22, 23, 24

PYQ July 21

(12) The number of terms of the series: 5 + 7 + 9+..... must be taken so that the sum may be 480.

a. 20 b. 10
c. 15 d. 25

PYQ July 21

(13) If the sum of 'n' terms of an AP (Arithmetic Progression) is $2n^2$, the fifth term is ____

☆ a. 20 b. 50
c. 18 d. 25

PYQ Dec. 21

(14) The sum of first n terms an AP is $3n^2 + 5n$. The series is:

a. 8, 14, 20, 26, ... b. 8, 22, 42, 68, ..
c. 22, 68, 114, ... d. 8, 14, 28, 44, ..

PYQ June 22

(15) The n^{th} term of the series 9,7,5,.... and 15,12,9,.... are same. Find the n^{th} term?

☆ a. 7 b. 8
c. 9 d. 10

PYQ May 18, PYQ June 22

(16) A person pays ₹ 975 in monthly installments, each installment is less than former by ₹ 5. The amount of 1st installment is ₹ 100. In what time will the entire amount be paid?

a. 26 months b. 15 months
c. Both (a) & (b) d. 18 months

PYQ Dec 22

(17) If p^{th} term of an AP is q and its q^{th} term is p, then what will be the value of $(p+q)^{th}$ term? ☆

a. 0 b. 1
c. $p+q-1$ d. $2(p+q-1)$

PYQ Jun 23

(18) How many numbers between 74 and 25,556 are divisible by 5?

a. 5090 b. 5097
c. 5095 d. 5075

PYQ Jun 23

(19) If 9^{th} and 19^{th} term of an Arithmetic Progression are 35 and 75, respectively, then its 20^{th} term is:

a. 78 b. 79
c. 80 d. 81

Answer Key

1	b	2	b	3	a
4	a	5	c	6	d
7	d	8	c	9	c
10	b	11	a	12	a
13	c	14	a	15	a
16	b	17	a	18	b
19	b				

Arithmetic Progression AP

Mock Test Paper Questions

MTP May 18

(1) If 8th term of an AP is 15, the Sum of the 15 its term is

a. 15 b. 0
c. 225 d. 225/2

MTP May 18

(2) For what value of x; the sequence $x+1, 3x, 4x+2$ are in AP?

a. 3 b. 2
c. 4 d. 5

MTP Nov 18

(3) The nth element of the series 1,3,5,7, …… is

a. 2 b. $2n-1$
c. $2n+1$ d. none of these

MTP Nov 18

(4) If $\frac{1+3+5+\ldots\ldots\ldots+n\text{terms}}{2+4+6+\ldots\ldots\ldots+50\text{terms}}=\frac{2}{51}$, then the value of 'n'

a. 9 b. 10
c. 12 d. 13

MTP Nov 18

(5) If 6th and 13th term of an A.P are 15 and 36 respectively the A.P is

a. 2, 5, 8, 11 b. 1, 4, 6, 8
c. -4, -1, 2, 5 d. 0, 3, 6, 9

MTP May 19

(6) The value of K, for which the terms 7K +3, 4K-5, 2K+10 are in A.P., is

a. 13 b. -23
c. 13 d. 23

MTP May 19 Series II

(7) Which term of the AP 64, 60, 56, 52….is Zero

a. 16 b. 17
c. 15 d. 14

MTP Nov 19

(8) The first term of an A.P. is 100 and the sum of whose first 6 terms is 5 times the sum of the next 6 terms, then the c.d. is – ☆

a. -10 b. 10
c. 5 d. none of these

MTP Nov 19

(9) The sum of n terms of an A.P. is $3n^2+n$; then its p^{th} term is

a. 6P+2 b. 6P–2
c. 6P–1 d. none of these

Note: Given ans in MTP (c) is incorrect. Correct is (b).

MTP Nov 19

(10) If three AM's between 3 and 11, they are

a. 4, 6, 8
b. 3, 5, 7
c. 5, 7, 9
d. 11/2, 15/2, 19/2

MTP May 20

(11) The first and the last term of an AP are – 4 and 146. The sum of the terms is 7171. The number of terms is

a. 101 b. 100
c. 99 d. none of these

MTP March 21

(12) If the sum of n terms of an A.P. is $3n^2 - n$ and its common difference is 6, then its third term is:

a. 10 b. 12
c. 14 d. 16

MTP March 21

(13) Insert 4 A.M.'s between 3 and 18:

a. 12,15,9,6 b. 6,9,12,15
c. 9,6,12,15 d. 15,12,9,6

MTP Nov 21

(14) The sum of the first 3 terms in an AP is 18 and that of the last 3 is 28. If the AP has 13 terms, ☆ what is the sum of the middle three terms?

a. 23 b. 18
c. 19 d. none of these

Note: Ans in MTP is wrong (d) Correct ans is a. 23

PYQ Jul 21, MTP Nov 21

(15) If the sum of 'terms of an Arithmetic Progression is $2n^2$, the fifth term is.

a. 20 b. 50
c. 18 d. 25

MTP Nov 21

(16) The ratio of sum of first n natural numbers to that of sum of cubes of first n natural numbers is

a. 3:16 b. n(n+1) / 2
c. 2 / n(n+1) d. None of these

MTP Oct 21

(17) The sum of progression (a+b), a, (a–b).....n term is

☆ a. $\frac{n}{2}\left[2a+(n-1)b\right]$ b. $\frac{n}{2}\left[2a+(3-n)b\right]$

c. $\frac{n}{2}\left[2a+(3-n)\right]$ d. $\frac{n}{2}\left[2a+(n-1)\right]$

MTP Oct 21

(18) Find the sum of first twenty-five terms of A.P. series whose nth term is $\left(\frac{n}{5}+2\right)$

a. 105 b. 115
c. 125 d. 135

MTP June 22

19) The first and fifth term of an A.P. of 40 terms are -29 and -15 respectively. Find the sum of all positive terms of this A.P

a. 1605 b. 1705
c. 1805 d. none of these

MTP June 22

(20) If the common difference of an AP equals to the first term, then the ratio of its m^{th} term and n^{th} term is:

a. n:m b. m: n
c. $m^2 : n^2$ d. none of these

MTP June 22

(21) Find the value of 1 + 2 + 3 + ---------- + 105

a. 5000 b. 5560
c. 5565 d. None of these

MTP Dec 22 – Series I

(22) The first and last terms of an arithmetic progression are 5 and 905. Sum of the terms is 45,955. The number of terms is

a. 99 b. 100
c. 101 d. 102

MTP Dec 22 – Series I

(23) If the sum of n terms of an AP is $3n^2 - n$ and its common difference is 6, then its term is

a. 3 b. 2
c. 4 d. 1

Note: Requirement should be to find first term but que in MTP is incomplete.

MTP Dec 22 Series II

(24) Sum lying from 100 to 300 which is divisible by 4 and 5 is

a. 2000 b. 2100
c. 2200 d. 2300

MTP Dec 22 Series II

(25) Sum of x terms of two AP's are in the ratio $(3x+5):(5x+3)$ then ratio of their 10^{th} term ☆ is

a. 31 : 49 b. 30 : 49
c. 28 : 49 d. None of these

MTP June 2023 Series I

(26) In AP $T_p = q$ and $T_q = p$ then T_{p+q} = _____

a. 0 b. - (p + q)
c. $\frac{p+q}{2}$ d. 1

MTP June 2023 Series II

(27) If 20 AMs. are inserted between 3 and 51 then sum of these 20 A.M.s is

a. 540 b. 1080
c. 270 d. None of these

MTP June 2023 Series II

(28) The 4th term of an A.P. is three times the first and the 7th term exceeds the third term by 1. Find the first term 'a' and common difference 'd'.

a. $a=3, d=2$ b. $a=4, d=3$
c. $a=5, d=4$ d. $a=6, d=5$

Answer Key

1	c	2	a	3	b
4	b	5	d	6	b
7	b	8	a	9	b
10	c	11	a	12	c
13	b	14	a	15	c
16	c	17	b	18	b
19	b	20	b	21	c
22	c	23	b	24	c
25	a	26	a	27	a
28	a				

Geometric Progression

Past Year Questions

PYQ Nov. 18

(1) The 3rd term of a G.P. is $\frac{2}{3}$ and the 6th term is $\frac{2}{81}$, then the 1st term is

a. 6 b. $\frac{1}{3}$
c. 9 d. 2

PYQ June 19

(2) In a G.P. if the fourth term is '3' then the product of first seven terms is

a. 3^5 b. 3^7
c. 3^6 d. 3^8

PYQ June 19

(3) If $y = 1 + x + x^2 + \ldots\ldots\ldots\ldots \infty$ then $x =$

a. $\frac{y-1}{y}$ b. $\frac{y+1}{y}$
c. $\frac{y}{y+1}$ d. $\frac{y}{y-1}$

PYQ Nov. 19

(4) Sum up to infinity of series.

A ☆ $\frac{1}{2}+\frac{1}{3^2}+\frac{1}{2^3}+\frac{1}{3^4}+\frac{1}{2^5}+\ldots\ldots\ldots$

a. 19/24 b. 24/19
c. 5/24 d. None of these

PYQ Nov. 19

(5) Sum the series $\frac{1}{5}, \frac{1}{5^2}, \frac{1}{5^3} \ldots\ldots\ldots\ldots \frac{1}{5^n}$.

a. $\frac{1}{4}\left[1-\left(\frac{1}{5}\right)^n\right]$ b. $\frac{1}{5}\left[1-\left(\frac{1}{4}\right)^n\right]$
c. Both (a) & (b) d. None of these

PYQ Nov. 19

(6) Find the no. of terms of the series 25, 5, 1 ……. $\frac{1}{3125}$

a. 6 b. 7
c. 8 d. 9

PYQ Nov. 20

(7) Three numbers in G.P. with their sum 130 and their product 27,000 are:

a. 10, 30, 90 b. 90, 30, 10
c. Both (a) & (b) d. 10, 20, 30

PYQ Jan. 21

(8) In a geometric progression that 3rd and 6th terms are respectively 1 and -1/8. The term (a) and common ratio are respectively.

a. 4 and $\frac{1}{2}$ b. 4 and $\frac{-1}{4}$
c. 4 and $\frac{-1}{2}$ d. 4 and $\frac{1}{4}$

PYQ Dec. 21

(9) If the sum and product of three numbers in G.P. are 7 and 8 respectively, then 4th term of the ☆ series is

a. 6 b. 4
c. 8 d. 16

PYQ Dec. 21

(10) The sum of series 7 + 14 + 21 + …… to 17th term is:

a. 1071 b. 971
c. 1171 d. 1271

PYQ Dec. 21

(11) The largest value of n for which ☆ $\frac{1}{2}+\frac{1}{2^2}+\ldots\ldots\frac{1}{2^n}<0.998$ is

a. 9 b. 6
c. 7 d. 8

PYQ June 22

(12) The sum of first 8 terms of a G.P is five times the sum of the first 4 terms. Find the common ratio?

a. $\pm\sqrt{2}$ b. 16

c. $\pm\sqrt{20}$ d. 4

PYQ Dec. 22

(13) In a GP 5^{th} term is 27 and 8^{th} term is 729. Find its 11^{th} term?

a. 729 b. 6561

c. 2187 d. 19683

PYQ Jun 23

(14) If 4^{th}, 7^{th} and 10^{th} terms of a Geometric Progression are p, q and r, respectively, then:

a. $p^2 = q^2 + r^2$ b. $p^2 = qr$

c. $q^2 = pr$ d. $pqr + pq + 1 = 0$

Answer Key

1 a	2 b	3 a
4 a	5 a	6 c
7 c	8 c	9 c
10 a	11 d	12 a
13 d	14 c	

Geometric Progression

Mock Test Paper Questions

MTP May 18

(1) For what values of x, the number $\frac{-2}{7}, x, \frac{-7}{2}$ are in G.P.?

a. ± 1 b. ± 3

c. ± 2 d. None

MTP May 19

(2) Find the three numbers in G.P, whose sum is 19 and product is 216.

a. 9,6,4 or 4,6,9 b. 9,6,3 or 3,6,9

c. 9,3,1 or 1,3,9 d. 9,3, -1 or -1,3,9

MTP May 19

(3) The nth term of the sequence -1,2, - 4, 8,.is

a. $(-1)^{-n} 2^{n-1}$ b. 2^{n-1}

c. 2^n d. None of these

MTP May 19 Series I

(4) The sum of the first two terms of a GP is 5/3 and the sum of infinity of the series is 3. The common ratio is

a. 1/3 b. 2/3

c. -1/3 d. None of these

Note: Correct Ans is $\pm\frac{2}{3}$

MTP May 19 Series I

(5) The sum of the infinite series 1 + 2/3 + 4/9 +.....is

a. 1/3 b. 3

c. 2/3 d. None of these

MTP March 202

(6) Find the sum to n terms of the series : 7+77+777+..... to n terms:

a. $\frac{7}{9}(10^{n+1} - 10) - \frac{7n}{9}$

b. $\frac{7}{9}(10^{n+1} - 10) + \frac{7n}{9}$

c. $\frac{7}{81}(10^{n+1} - 10) - \frac{7n}{9}$

d. $\frac{7}{81}(10^{n+1} - 10) + \frac{7n}{9}$

MTP Apr 21

(7) Given: P (7 , k) = 60 P (7, k-3). Then:

a. K = 9 b. K = 8

c. K = 5 d. K = 0

Note: From Chp5 PNC

MTP Apr 21

(8) If the pth term of a G.P. is x and the qth term is y, then find the nth term:

a. $\left[\frac{x^{(n-q)}}{y^{(n-p)}}\right]$ b. $\left[\frac{x^{(n-q)}}{y^{(n-p)}}\right]^{(p-q)}$

c. 1 d. $\left[\frac{x^{(n-q)}}{y^{(n-p)}}\right]^{\frac{1}{p-q}}$

Note: Extra Lengthy Solution.

MTP Apr 21

(9) The sum of the series: 0.5+0.55+0.555+..... to n term is:

a. $\frac{5n}{9} + \frac{5}{9}\left[1-(0.1)^n\right]$

b. $\frac{5n}{9} - \frac{5}{81}\left[1-(0.1)^n\right]$

c. $\frac{5n}{9} + \frac{5}{81}\left[1-(0.1)^n\right]$

d. None

MTP Oct 21

(10) The second term of a G P is 24 and the fifth term is 81. The series is

a. 16, 36, 24, 54…..
b. 24, 36, 53… …
c. 16, 24, 36, 54,……
d. none of these

MTP Oct 21

(11) The series $1+10^{-1}+10^{-2}+10^{-3}....to\ \infty$ is

a. 9/10 b. 1/10
c. 10/9 d. none of these

MTP March 22

(12) In a GP .if fourth term is 3 then the product of first seven terms is

a. 3^5 b. 3^7
c. 3^6 d. 3^8

PYQ Nov 18, MTP March 22

(13) In a G.P. If the third term of a GP is 2/ 3 and 6th term is 2/ 81, then the first term is

a. 6 b. 1/3
c. 9 d. 2

PYQ Nov 19, MTP March 22

(14) Sum upto infinity series

☆ $\frac{1}{2}+\frac{1}{3^2}+\frac{1}{2^3}+\frac{1}{3^4}+\frac{1}{2^5}+...$

a. 19/24 b. 24/19
c. 5/24 d. none of these

MTP June 22

(15) In a G. P sixth term is 729 and the common ratio is 3, then the first term of G.P is

a. 2 b. 3
c. 4 d. 7

MTP Dec 22 – Series I

(16) In a geometric progression, the second term is 12 and sixth term is 192. Find 11^{th} term.

a. 3072 b. 1536
c. 12288 d. 6144

PYQ Jun 22, MTP Dec 22 – Series I

(17) The sum of first eight terms of geometric progression is five times the sum of the first four

☆ terms. The common ratio is

a. $\sqrt{3}$ b. $\sqrt{2}$
c. 4 d. 2

MTP Dec 22 Series II

(18) If 5th term of G.P. is 32 and 3rd term of G.P. is 8 then 6th term of G.P. is

a. 4 b. 16
c. 32 d. 6

Note: Correct option d should be 64 not 6

MTP Dec 22 Series II

(19) Which term of the sequence 2, 4, 8, 16 ……. is 2048?

a. 9 b. 10
c. 11 d. None of these

MTP June 2023 Series I

(20) The 5^{th} and 8^{th} terms of a GP series is 27 and 729. Then find the 10^{th} term.

a. 729 b. 243
c. 81683 d. 6561

MTP June 2023 Series I

(21) Four Geometric Means between 4 and 972 are

a. 12, 30, 100, 324
b. 12, 24, 108, 320
c. 10, 36, 108, 320
d. 12, 36, 108, 324

MTP June 2023 Series II

(22) The sum upto infinity of the series

$S=\frac{1}{2}+\frac{1}{6}+\frac{1}{18}+..... \text{ is}$

a. $\frac{5}{4}$
b. $\frac{3}{4}$
c. $\frac{7}{3}$
d. None of these

Answer Key

1 a	2 a	3 a
4 d	5 b	6 c
7 c	8 d	9 b
10 c	11 c	12 b
13 a	14 a	15 b
16 d	17 b	18 d
19 c	20 d	21 d
22 b		

Other Problems

Past Year Questions

PYQ May 18

(1) The sum of m terms of the series $1+11+111+\ldots\ldots$ up to m terms, is equal to:

a. $\frac{1}{81}(10^{m+1}-9m-10)$

b. $\frac{1}{27}(10^{m+1}-9m-10)$

c. $10^{m+1}-9m-10$

d. None of these

PYQ Nov. 19

(2) If $\frac{(b+c-a)}{a}, \frac{(c+a-b)}{b}, \frac{(a+b-c)}{c}$ are in AP then a, b, c are in:

a. AP b. GP

c. HP d. None of these

Note: HP is out of syllabus.

PYQ Nov. 19

(3) If the AM and GM of two numbers is 6.5 and 6 the no.'s are:

a. 3 and 2 b. 9 and 4

c. 81 and 16 d. None of these

PYQ Nov. 19

(4) If AM and HM for two numbers are 5 and 3.2, respectively. GM will be:

a. 20 b. 16

c. 4 d. 5

PYQ July 21

(5) ☆ The sum of three numbers in a geometric progression is 28. When 7, 2 and 1 are subtracted from the first, second and the third numbers respectively, then the resulting numbers are in arithmetic progression. What is the sum of squares of the original three numbers?

a. 510 b. 456

c. 400 d. 336

Note: Extra lengthy solution.

PYQ Jan. 21

(6) The n^{th} term of the series $3+7+13+21+31+\ldots\ldots\ldots$ is

a. $4n-1$ b. n^2+2n

c. n^2+n+1 d. n^3+2

Answer Key

1	a	2	c	3	b
4	c	5	d	6	c

Other Problems

Mock Test Paper Questions

MTP May 21

(1) Three numbers are in AP and their sum is 21. If 1, 5, 15 are added to them respectively, they form a G. P. The numbers are

a. 5, 7, 9 b. 9, 5, 7

c. 7, 5, 9 d. none of these

MTP May 20

(2) The sum of three numbers in G.P. is 70. If the two extremes by multiplied each by 4 and the mean by 5, the products are in AP. The numbers are

a. 12, 18, 40 b. 10, 20, 40

c. 40, 20, 15 d. none of these

MTP Nov 20

(3) If a, b, c are in AP and x, y, z are in GP , then the value of $x^{(b-c)}.y^{(c-a)}.z^{(a-b)}$ is

a. 1 b. 0

c. $b(c-a)$ d. none of these

MTP Apr 21

(4) If $a^{1/x}=b^{1/y}=c^{1/z}$ and a,b,c are in G.P; the x,y,z are in:

a. A.P b. G.P

c. Both (a) and (b) d. None of these

MTP March 22

(5) If x, y and z are the terms in G.P , then the term $x^2+y^2, xy+yz, y^2+z^2$ are in

a. AP b. GP

c. HP d. None of these

MTP May 18

(6) If $a^{1/x}=b^{1/y}=c^{1/z}$ then a, b, c are in GP then x, y, z are in

a. AP b. GP

c. HP d. AGP

MTP Nov 20

(7) ☆ The sum of the first two terms of an infinite geometric series is 15 and each term is equal to the sum of all the terms following it; then the sum of the series is

a. 20 b. 15

c. 25 d. None

Note: Extra lengthy solution

MTP March 21

(8) $\sum n^2$ defines:

a. $\frac{n(n+1)(2n+1)}{6}$ b. $\frac{n(n+1)}{2}$

c. $\left[\frac{n(n+1)}{2}\right]$ d. none of these

MTP June 2023 Series II

(9) 1 Find the sum to n terms of the series: 7+77+777+ to n terms:

a. $\frac{7}{9}(10^{n+1}-10)-\frac{7n}{9}$

b. $\frac{7}{9}(10^{n+1}-10)+\frac{7n}{9}$

c. $\frac{7}{9}\left[\frac{10(10^n-1)}{9}-n\right]$

d. $\frac{7}{81}(10^{n+1}-10)+\frac{7n}{9}$

Answer Key

1 a	2 b	3 a
4 a	5 b	6 a
7 a	8 a	9 c

Chapter 7 – Set, Relations and Functions

Sets

Past Year Questions

PYQ May 18

(1) The numbers of proper subset of the set (3, 4, 5, 6, 7) is

a. 32 b. 31
c. 30 d. 25

PYQ Nov. 18

(2) If $A = (1, 2, 3, 4, 5, 6, 7)$ and $B = (2, 4, 6, 8)$. Cardinal number of $A - B$ is:

a. 4 b. 3
c. 9 d. 7

PYQ June 19

(3) If $A = (1, 2, 3, 4, 5, 6, 7, 8, 9)$
$B = (1, 3, 4, 5, 7, 8)$
$C = (2, 6, 8)$ then find $(A - B) \cup C$

a. (2, 6) b. (2, 6, 8)
c. (2, 6, 8, 9) d. None of these

PYQ June 19

(4) The no. of subsets of the set (3, 4, 5) is:

a. 4 b. 8
c. 16 d. 32

PYQ Nov. 19

(5) $(A^T)^T = ?$

a. A b. A^T
c. $A^T.A^T$ d. A^{2T}

Note: This que is from matrix (deleted topic).

PYQ Nov. 20

(6) Two finite sets respectively have x and y number of elements. The total number of subsects of the first is 56 more than the total number of subsets of the second. The value of x and y respectively.

a. 6 and 3 b. 4 and 2
c. 2 and 4 d. 3 and 6

PYQ Nov. 20

(7) The set of cubes of the natural number is:

a. A null set
b. A finite set
c. An infinite set
d. A finite set of three numbers

PYQ Nov 20, PYQ Jan 21

(8) The set of cubes of natural number is

a. Null set
b. A finite set
c. An infinite set
d. Singleton set

PYQ Jan. 21

(9) The number of integers from 1 to 100 which are neither divisible by 3 nor by 5 nor by 7 is

☆ a. 67 b. 55
c. 45 d. 33

PYQ July 21

(10) Let U be the universal set, A and B are the subsets of U. If $n(U) = 650$, $n(A) = 310$ $n(A \cap B) = 95$ and $n(B) = 190$, then $n(\bar{A} \cap \bar{B})$ is equal to ($\bar{A}$ and $\bar{B}$ are the complement of A and B respectively):

a. 400 b. 200
c. 300 d. 245

PYQ Nov 20, PYQ June 22

(11) Two finite sets have x and y number of elements. The total number of subsets of first is 56 more than the total number of subsets of second. The value of x and y is:

a. 6 and 3 b. 4 and 2
c. 2 and 4 d. 3 and 4

PYQ June 22

(12) Given $A = (2, 3)$, $B = (4, 5)$, $C = (5, 6)$ then $A \times (B \cap C)$ is

a. $\{(2,5),(3,5)\}$ b. $\{(5,2),(5,3)\}$
c. $\{(2,3),(5,5)\}$ d. None of these

PYQ June 22

(13) If the universal set $E = (x : x$ is a positive integer $< 25)$, $A = (2, 6, 8, 14, 22)$, $B = (4, 8, 10, 14)$

a. $(A \cap B)' = A' \cup B'$
b. $(A \cap B)' = A' \cap B'$
c. $(A' \cap B') = \varphi$
d. None of these

PYQ May 18

(14) ☆ In a town of ₹ 20,000 families it was found that 40% families buy newspaper A, 20% families buy newspaper B and 10% families buy newspaper C, 5% families buy A and B, 3% buy B and C and 4% buy A and C, if 2% families buy all the three newspaper, then the number of families which buy A only is:

a. 6600 b. 6300
c. 5600 d. 600

PYQ Nov. 20

(15) The number of items in the set A is 40; in the set B is 32; in the set C is 50; in both A and B is 4, in both A and C is 5; in both B and C 7 in all the sets 2. How many are in at least one if the set?

a. 110 b. 65
c. 108 d. 84

PYQ Dec. 21

(16) ☆ Out of a group of 20 teachers in a school, 10 teach Mathematics, 9 teach Physics and 7 teach Chemistry. 4 teach Mathematics and Physics but none teach both Mathematics and Chemistry. How many teach Chemistry and Physics; how many teach only Physics?

a. 2, 3 b. 3, 2
c. 4, 6 d. 6, 4

PYQ Dec. 22

(17) If $A = (1,2,3,4,5,7,8,9)$ and $B = (2,4,6,7,9)$ then how many proper subset of

$A \cap B$

$(A-B) \cup (B-A)$

$A \times B$

$A' \cup B'$

$xy \in A, y \in A$ can be created?

$[fog(3) - gof(-3)]$

$$f(x) = \begin{cases} 2x \text{ for } x > 3 \\ x^2 \text{ for } 1 < x \leq 3 \\ 3x \text{ for } x \leq 1 \end{cases}$$

a. 16 b. 15
c. 32 d. 31

PYQ Dec. 22

(18) The number of subsets of the set (0, 1, 2, 3) is:

a. 2 b. 4
c. 8 d. 16

PYQ Jun 23

(19) A survey shows that 74% of the Canadian like grapes, whereas 68% like bananas. What percentage of the Canadians like both grapes and bananas, if everybody likes either of two?

a. 32% b. 26%
c. 6% d. 42%

PYQ Jun 23

(20) If $A = (a, b, c)$, $B = (b, c, d)$ and $C = (a, d, c)$ then $(A-B)\times(B \cap C)$ is equal to:

a. $\{(a,d),(c,d)\}$ b. $\{(a,c),(a,d)\}$
c. $\{(c,a),(d,a)\}$ d. $\{(a,c),(a,d),(b,d)\}$

Answer Key

1	b	2	a	3	c
4	b	5	a	6	a
7	c	8	c	9	c
10	d	11	a	12	a
13	a	14	a	15	c
16	a	17	b	18	d
19	d	20	b		

Sets

Mock Test Paper Questions

MTP Nov 18

(1) The number of proper subsets of the set {3, 4, 5, 6, 7} is

a. 32 b. 31
c. 30 d. 25

MTP Nov 18

(2) If A and B are two sets $A = \{1, 2,3,4\}$ and $B = \{2,3 ,4\}$ then $(A-B)\cup(B-A)$

a. {1}
b. {1, 2, 3}
c. {1, 3}
d. {1, 2, 3, 4}

MTP Nov 18

(3) The number of subsets {1,2, 5} is

a. 3 b. 8
c. 6 d. 9

MTP May 19

(4) If $A = \{1,2,3,4,5,6,7\}$ and $B = \{2,4,6\}$ Cardinal number of $A \cup B$

a. 3 b. 16
c. 5 d. 7

MTP May 19 Series II

(5) If $A = \{1, 2, 3, 4\}$ and $B = \{5, 6, 7, 6\}$, then cardinal number of the set $A \times B$ is _____

a. 7 b. 1
c. 16 d. none of these

MTP Nov 19

(6) If $A = \{1, 2, 3, 4, 5\}$ and $B = \{6, 7, 8\}$, then cardinal number of $A \times B$ is:

a. 15 b. 5
c. 3 d. 8

MTP Nov 19

(7) The number of subsets of the set $A = \{1, 2, 3, 4, 5, 6, 7, 8\}$ is

a. 36 b. 128
c. 256 d. None of these

MTP May 20

(8) $(A \cup B)'$ is equal to

a. $(A' \cup B)'$ b. $A' \cap B'$
c. $A' \cup B'$ d. none of these

MTP Nov 20

(9) If $A = \{p, q, r, s\}$, $B = \{q, s, t\}$ and $C = \{m, q, n\}$ find $C-(A \cap B)$

a. $\{m, n\}$ b. $\{p, q\}$
c. $\{r, s\}$ d. $\{p, r\}$

MTP Nov 20

(10) The set having no element is called

a. Singleton set
b. Null set
c. Finite set
d. Infinite set

MTP March 21

(11) If $A = \{1, 2, 3, 4, 5\}$ and $B = \{6, 7, 8, 9\}$, then cardinal number of $A \times B$ is:

a. 20 b. 5
c. 3 d. 8

MTP March 21

(12) The number of subsets of the set $A = \{1, 2, 3, 4, 5, 6, 7, 8\}$ is

a. 36 b. 128
c. 256 d. None of these

MTP March 21

(13) If $A = (1,2,3,4,5)$ $B = (2,4)$ and $C = (1,3,5)$ then $(A-C) \times B$ is

a. $\{(2,2,), (2,4), (4,2), (4,4), (5,2), (5,4)\}$
b. $\{(2,2,), (2,4), (4,2), (4,4), (5,2), (5,4)\}$
c. $\{(2,2), (4,2), (4,4), (4,5)\}$
d. $\{(2,2), (2,4), (4,2), (4,4)\}$

MTP Nov 21

(14) Let Z be the universal set for two sets – A and B. If $n(A) = 300$, $n(B) = 400$ and $n(A \cap B) = 200$, then $n(A' \cap B')$ is equal to 400 provided $n(Z)$ is equal to

a. 900 b. 800
c. 700 d. 600

MTP Nov 21

(15) If $A = \{4,5\}$, $B = \{2,3\}$, $C = \{5,6\}$ then $A \times (B \cap C)$ is

a. $\{(2,5), (3,5)\}$ b. $\{(4,2), (4,6)\}$
c. $\{(4,3), (4,2)\}$ d. none of these

MTP March 21

(16) If $A = \{1, 2,3\}$, $B = \{3,4\}$ and $C = \{4, 5,6\}$, then $A \times (B \cap C) =$

a. $\{(1,4), (2,4), (3,4)\}$
b. $\{(1,4), (2,4), (3,4)\}$
c. $\{(3, 4), (2, 4)\}$
d. $\{(1, 2), (1, 4), (1, 6), (3, 4)\}$

MTP Dec 22 – Series I

(17) Two finite sets have m and n elements. The total number of subsets of first set is 56 more than the total number of subsets of the second set. The value of m and n are

a. 6,3 b. 7,6
c. 5,1 d. 8,7

MTP Dec 22 Series II

(18) The number of proper subset of the set $\{3, 4, 5, 6, 7\}$ is

a. 32 b. 31
c. 30 d. 25

MTP Dec 22 Series II

(19) Let A be the set of squares of natural numbers and let $x \in A, y \in A$, then

☆ a. $x + y \in A$ b. $x - y \in A$
c. $\frac{x}{y} \in A$ d. $xy \in A$

MTP May 20

(20) A town has a total population of 50,000. Out of it 28,000 read the newspaper X and 23,000 read Y while 4,000 read both the papers. The number of persons not reading X and Y both is

a. 2,000 b. 3,000
c. 2,500 d. none of these

MTP Apr 21

(21) ☆ In a survey of 300 companies, the number of companies using different Media-Newspapers (N), Radio (R) and Television (T) are as follows: $n(N) = 200$, $n(R) = 100$, $n(T) = 40$, $n(N \cap R) = 50$, $n(R \cap T) = 20$, $n(N \cap R) = 25$, and $n(N \cap R \cap T) = 5$,
Find the numbers of companies using none of these media:
a. 20 companies b. 250 companies
c. 30 companies d. 50 companies

MTP Nov 21

(22) In a group of students 80 can speak Hindi, 60 can speak English and 40 can speak Hindi and English both, then number of students is:
a. 100 b. 140
c. 180 d. 60

MTP Dec 22 Series II

(23) ☆ Out of total 150 students, 45 passed in Accounts, 30 in Economics and 50 in Maths, 30 in both Accounts and Maths, 32 in both Maths and Economics, 35 in both Accounts and Economics, 25 students passed in all the three subjects. Find the numbers who passed at least in any one of the subjects:
a. 63 b. 53
c. 73 d. none of these

MTP June 2023 Series I

(24) If $A = (0,1,2,3,4,5)$ then the number of subsets of A is
a. 64 b. 63
c. 61 d. 60

MTP June 2023 Series I

(25) The number of proper subsets of $A \cap B$, $A = (1,2,3,4,5,7,8,9,10)$ and $B = (2,4,6,7,9)$
a. 8 b. 15
c. 16 d. 64

MTP June 2023 Series II

(26) Out of 20 members in a family, 11 like to take tea and 14 like coffee. Assume that each one likes at least one of the two drinks. Find how many like both coffee and tea:
a. 2 b. 3
c. 4 d. 5

Answer Key

1 b	2 a	3 b
4 d	5 c	6 a
7 c	8 b	9 a
10 b	11 a	12 c
13 d	14 a	15 d
16 a	17 a	18 b
19 d	20 b	21 d
22 a	23 b	24 a
25 a	26 d	

Relations

Past Year Questions

PYQ Nov. 18

(1) If $A = (1, 2)$ and $B = (3, 4)$. Determine the number of relations from A and B:
a. 3 b. 16
c. 5 d. 6

PYQ June 19

(2) ☆ $A = (1, 2, 3, 4, \ldots\ldots, 10)$ a relation on A, $R = \{(x, y) / x + y = 10, x \in A, y \in A, x \geq y\}$ then domain of R^{-1} is
a. (1, 2, 3, 4, 5)
b. (0, 3, 5, 7, 9)
c. (1, 2, 4, 5, 6, 7)
d. None of these

PYQ Jan. 21

(3) In the set of all straight lines on a plane which of the following is not 'TRUE'?
a. Parallel to an equivalence relation
b. Perpendicular to is a symmetric relation
c. Perpendicular to is an equivalence relation
d. Parallel to a reflexive relation

PYQ Dec. 21

(4) ☆ If a is related to b if and only if the difference in a and b is an even integer. This relation is
a. Symmetric, reflexive but not transitive
b. Symmetric, transitive but not reflexive
c. Transitive, reflexive but not symmetric
d. Equivalence relation

PYQ Dec. 22

(5) Let $A = (1,2,3)$ and consider the relation $R = \{(1,1),(2,2),(3,3),(1,2),(2,3),(1,3)\}$

☆ Then R is:

a. Symmetric and transitive
b. Reflexive but not transitive
c. Reflexive but not symmetric
d. Neither symmetric, nor transitive

PYQ Jun 23

(6) Given the relation $R = \{(1,2),(2,3)\}$ on the set $A = \{1,2,3\}$, the minimum number of ordered pairs which when added to R make it equivalence relation is

a. 5 b. 7
c. 6 d. 8

PYQ Jun 23

(7) If R be a relation defined on the set of Natural numbers as" $xRy \Leftrightarrow (x-y)$ is divisible by 5" $\forall x, y \in N$ then the relation R is

a. Equivalence
b. Anti-symmetric
c. Symmetric but not transitive
d. Symmetric but not reflexive

Answer Key

1	b	2	a	3	c
4	d	5	c	6	b
7	a				

Relations

Mock Test Paper Questions

MTP May 18

(1) On the sets of lines in a plane the Relation "is perpendicular to" is

a. Reflexive b. Symmetric
c. Transitive d. None of these

MTP Nov 18

(2) On the set of lines, being Perpendicular is a _____ relation.

a. Reflexive
b. Symmetric
c. Transitive
d. None of these

MTP Dec 22 Series II

(3) Let $A = \{1,2,3\}$, then the relation $R = \{(1,1),(2,3),(2,2),(3,3),(1,2)\}$ is:

a. Symmetric b. Transitive
c. Reflexive d. Equivalence

Answer Key

1	b	2	b	3	c

Functions

Past Year Questions

PYQ May 18

(1) Let N be the set of all natural numbers; E be the set of all even natural numbers then the function;
$f: N \to E$ defined as $f(x) = 2x, x \in N$

a. One-One Into
b. Many-One Into
c. One-One Onto
d. Many-One Onto

PYQ Nov. 18

(2) A is (1, 2, 3, 4) and B is (1, 4, 9, 16, 25) is a function f is defined from set A to B where $f(x) = x^2$ then the range of f is:

a. (1, 2, 3, 4) b. (1, 4, 9, 16)
c. (1, 4, 9, 16, 25) d. None of these

PYQ Nov. 18

(3) Identify the function from the following:

a. $\{(1,1),(1,2),(1,3)\}$
b. $\{(1,1),(2,1),(2,3)\}$
c. $\{(1,2),(2,2)(3,2),(4,2)\}$
d. None of these

PYQ June 19

(4) If $f(x) = x^2$ and $g(x) = \sqrt{x}$ then

a. go f(3) = 3 b. go f(-3) = 9
c. go f(9) = 3 d. go f(-9) = 3

PYQ June 19

(5) If A = (a, b, c, d); B = (p, q, r, s) which of the following relation is a function from A to B

☆

a. $R_1 = \{(a,p),(b,q),(c,s)\}$
b. $R_2 = \{(p,a),(b,r),(d,s)\}$
c. $R_3 = \{(b,p),(c,s),(b,r)\}$
d. $R_4 = \{(a,p),(b,r),(c,q),(d,s)\}$

PYQ Nov. 19

(6) $f(n) = f(n-1) + f(n-2)$ when $n = 2, 3, 4 \ldots\ldots$ $f(0) = 0, f(1) = 1$ then $f(7) = ?$

☆ a. 3 b. 5
c. 8 d. 13

PYQ Nov. 19

(7) $f(x) = \frac{x+1}{x}$ find $f^{-1}(x)$

a. $1/(x-1)$ b. $1/(y-1)$
c. $\frac{1}{y} - 1$ d. X

PYQ Nov. 20

(8) The inverse function f^{-1} of $f(y) = 3y$ is:

a. $1/3y$ b. $y/3$
c. $-3y$ d. $1/y$

PYQ Jan. 21

(9) Let $f: R \Rightarrow R$ be defined by

☆ $$f(x) = \begin{cases} 2x \text{ for } x > 3 \\ x^2 \text{ for } 1 < x \le 3 \\ 3x \text{ for } x \le 1 \end{cases}$$

The value of $f(-1) + f(2) + f(4)$ is

a. 9 b. 14
c. 5 d. 6

PYQ July 21

(10) The range of the function f defined by $f(x) = \sqrt{16 - x^2}$ is

a. $(-4, 0)$ b. $(-4, 4)$
c. $[0, 4]$ d. $(+4, 4)$

PYQ July 21

(11) Let $A = R-(3)$ and $B = R-(1)$. Let $f(x) \to B$

☆ defined by $f(x) = \frac{x-2}{x-3}$. What is the value of $f^{-1}\left(\frac{1}{2}\right)$?

a. 2/3 b. 3/4
c. 1 d. - 1

PYQ July 21

(12) If $F(x) = x^2 - 1$ and $g(x) = |2x + 3|$, then

☆ $[fog(3) - gof(-3)]$ is ?

a. 71 b. 61
c. 41 d. 51

PYQ Dec. 21

(13) If $u(x) = \frac{1}{1-x}$, then $u^{-1}(x)$ is:

a. $\frac{1}{x-1}$ b. $1 - x$
c. $1 - \frac{1}{x}$ d. $\frac{1}{x} - 1$

PYQ June 22

(14) $f(x) = \{(2,2);(3,3);(4,4);(5,5);(6,6)\}$ be a relation of set $A = (2, 3, 4, 5, 6)$

a. Reflexive and Transitive
b. Reflexive and Symmetric
c. Reflexive only
d. An equivalence relation

PYQ June 22

(15) If $f(y) = \frac{y-1}{y}$, find $f^{-1}(x)$

☆ a. $\frac{1}{1-y}$ b. y
c. $\frac{y}{y-1}$ d. $\frac{y}{1-y}$

PYQ Jun 23

(16) If $f(x): N \to R$ is a function defined as $f(x) = 4x + 3, \forall x \in N$, then $f^{-1}(x)$ is:

a. $4 + \frac{x+3}{4}$ b. $\frac{x+3}{4}$
c. $\frac{x-3}{4}$ d. $\frac{3x+4}{4}$

Answer Key

1 c	2 b	3 c
4 a	5 d	6 d
7 a	8 b	9 a
10 c	11 c	12 b
13 c	14 c	15 a
16 c		

Functions

Mock Test Paper Questions

MTP May 18

(1) Find f o g for the functions $f(x) = x^8, g(x) = 2x^2 + 1$

a. $x^8(2x^2+1)$ b. x^8
c. $2x^2+1$ d. $(2x^2+1)^8$

PYQ Nov 18, MTP May 19

(2) If $A = \{1,2,3,4\}$ and $B = \{1,4,9,16,25\}$ is a function of f is defined set A to B where $f(x) = x$ 2 then the range of f is

a. $\{1,2,3,4\}$ b. $\{1,4,9,16\}$
c. $\{1,4,9,16,25\}$ d. none of these

MTP May 19

(3) If $f(x) = x+3$ and $g(x) = x^2$, then $fog(x)$

a. x^2+3 b. x^2+x+3
c. $(x+3)^2$ d. None of these

MTP May 19 Series II

(4) A function $f(x)$ is an even function, if

a. $-f(x) = f(x))$ b. $f(-x) = f(x)$
c. $f(-x) = -f(x)$ d. None of these

MTP May 19 Series II

(5) Find the f o g for the functions $f(x) = x^3$, $g(x) = x+1$

a. $x^2(x+1)$ b. x^2
c. $x+1$ d. $(x+1)^3$

MTP Nov 19

(6) If $f(x) = \left(\frac{x^2-4}{x-2}\right)$, then $f(2)$ is:

a. 0 b. 2
c. 4 d. 1

Note: From Chp8 – Calculus

MTP Nov 19

(7) If $f'(x) = 3x^2 + 2$ & $f(0)=0$ then find $f(2)$.

a. 8 b. 10
c. 12 d. none of these

ICAI SM, MTP May 20

(8) If $f(x) = \frac{x}{1-x}$ and $g(x) = \frac{x-1}{x}$, then g of (x) is

a. $x-1$ b. x
c. $1/x$ d. none of these

MTP Nov 2

(9) Let $f: R \to R$ be such that $f(x) = 2^x$, then $f(x+y)$ equals

a. $f(x) + f(y)$
b. $f(x).f(y)$
c. $f(x) \div f(y)$
d. None of these

MTP Nov 19, MTP March 2

(10) If $f(x) = \left(\frac{x^2-4}{x-2}\right)$, then $f(2)$ is

a. 0 b. 2
c. 4 d. 1

MTP March 2

(11) If $f(x) = x^k$ and $f'(1) = 10$ then the value of K is

a. 10a b. -10
c. 1/10 d. None

Note: From Chapter 8

MTP Apr 21

(12) Let R is the set of real numbers such that the function $f: R \to R$ and $g: R \to R$ are defined by by $f(x) = x^2 + 3x + 1$ and $g(x) = 2x-3$. Find (fog):

a. $4x^2+6x+1$ b. x^2+6x+1
c. $4x^2-6x+1$ d. x^2-6x+1

MTP Apr 21

(13) If $A = \{1,2,3,4\}$, $B = \{2,4,6,8\}$, $f(1) = 2$, $f(2) = 4$, $f(3) = 6$ and $f(4) = 8$, and $f: A \to B$ then f^{-1} is:

a. $\{(2,1), (4,2), (6,3) (8,4)\}$
b. $\{(1,2), (2,4), (3,6), (4,8)\}$
c. $\{(1,4), (2,2), (3,6), (4,8)\}$
d. none of these

MTP Nov 21

(14) If $f(x) = x^2 - 1$ and $g(x) = 2x+3$ then g of (3)

a. 71 b. 61
c. 41 d. 19

MTP Oct 21

(15) Find g o f for the functions $f(x) = \sqrt{x}$, $g(x) = 2x^2 + 1$.

a. $2x^2+1$ b. $2x+1$
c. $(2x^2+1)(\sqrt{x})$ d. $\sqrt{x}$

MTP Oct 21

(16) If $f(x)= x^2-1$ and $g(x)= \frac{x+1}{2}$, then $\frac{f(3)}{f(3)+g(3)}$ is

a. 5/4 b. 4/5
c. 3/5 d. 5/3

MTP March 22

(17) If $f(x)=\frac{2+x}{2-x}$, then $f^{-1}(x)$

a. $\frac{2(x-1)}{x+1}$ b. $\frac{2(x+1)}{x-1}$
c. $\frac{(x+1)}{x-1}$ d. $\frac{(x-1)}{x+1}$

MTP March 22

(18) If $f: R \to R$ is a function, defined by $f(x) = 2^x$; then $f(x+y)$ is

a. $f(x)+f(y)$ b. $f(x).f(y)$
c. $f(x) \div f(y)$ d. none

MTP March 22

(19) If $f(x) = x+2$, $g(x) = 7^x$, than g of $(x) =$ ____

a. $7^x.x+2.7^x$ b. 7^x+2
c. $49(7^x)$ d. none of these

MTP June 22

(20) Let R be a relation on N defined by $x+2y = 8$. The domain of R is:

a. {2, 4, 8} b. {2, 4, 6, 8}
c. {2, 4, 6} d. {1, 2, 3, 4}

MTP June 22

(21) The domain of the function $f(x)=\frac{x^2+3x+5}{x^2-5x+4}$ is:

a. R b. $R-\{1,4\}$
c. $R-\{1\}$ d. (1, 4)

MTP Dec 22 – Series I

(22) $f(p)=\frac{1}{1-p}$, then f^{-1} is

a. 1-p b. $\frac{p-1}{p}$
c. $\frac{p}{p-1}$ d. $\frac{1}{p}$

MTP Dec 22 – Series I

(23) ☆ Determine $f(x)$, given that $f'(x) = 12x^2-4x$ and $f(-3) = 17$

a. $f(x)=4x^3-2x^2+143$
b. $f(x)=6x^3-x^4+137$
c. $f(x)=3x^4-x^3-137$
d. $f(x)=4x^3-2x^2-143$

MTP June 2023 Series I

(24) If $f(x)=x^2-5$, evaluate $f(3)$, $f(-4)$, $f(5)$, and $f(1)$.

a. 0, 11, 20, 4 b. -4, 11, -2, 4
c. 4, 11, 20, -4 d. -2, 0, 20, 5

MTP June 2023 Series II

(25) If $f(x)=\frac{x}{\sqrt{1+x^2}}$ and $g(x)=\frac{x}{\sqrt{1-x^2}}$ Find fog?

a. x b. $\frac{1}{x}$
c. $\frac{x}{\sqrt{1-x^2}}$ d. $x\sqrt{1-x^2}$

MTP June 2023 Series II

(26) The range of the relation $\{(1,0)(2,0)(3,0)(4,0)(0,0)\}$ is

a. $\{1,2,3,4,0\}$ b. $\{0\}$
c. $\{1,2,3,4\}$ d. None of these

Answer Key

1 d	2 b	3 a
4 b	5 d	6 c
7 c	8 b	9 b
10 c	11 a	12 c
13 a	14 d	15 b
16 b	17 a	18 b
19 c	20 c	21 b
22 b	23 a	24 c
25 a	26 b	

Chapter 9 – Number Series, Coding and Decoding, Odd Man Out

Number Series and Alphabet Series

Past Year Questions

PYQ Nov. 18

(1) Find out the next number in the following series
7, 11, 13, 17, 19, 23, 25, 29?
a. 30 b. 31
c. 32 d. 33

PYQ June 19

(2) Find the next number in the series:
7, 23, 47, 119, 167
☆ a. 211 b. 223
c. 287 d. 319

PYQ Nov. 19

(3) Complete the series.
4, 16, 36, 64, 100_____.
a. 144 b. 121
c. 49 d. 120

PYQ Nov. 19

(4) Complete the series
4, 16_____256, 1024
a. 32 b. 48
c. 64 d. 46

PYQ Nov. 20

(5) Find the missing value in the series 0, 2, 3, 6, 10, 17, 28, ?, 75.
☆ a. 58 b. 46
c. 48 d. 54

PYQ Nov. 20

(6) Find the missing value in $\frac{3}{8}, \frac{8}{19}, \frac{18}{41}, ?, \frac{78}{173}$.
☆ a. $\frac{37}{84}$ b. $\frac{40}{87}$
c. $\frac{39}{86}$ d. $\frac{38}{85}$

PYQ Nov. 20

(7) Find the wrong term in:
G4T, J10R, M20P, P43N, S90L
☆ a. M20P b. P43N
c. J10R d. G4T

PYQ Nov. 20

(8) Find the next term 1, 5, 21, 57, ...
a. 105 b. 138
☆ c. 121 d. 101

PYQ Jan. 21

(9) Find the next term $\frac{1}{2}, \frac{3}{4}, \frac{5}{8}, \frac{7}{16}, ?$
a. 9/32 b. 10/17
c. 11/34 d. 12/35

PYQ Jan. 21

(10) Find the missing term: P 3 C, R 5 F, T 8 I, V 12 L, ?
a. Y170 b. X17M
c. X170 d. X160

PYQ July 21

(11) Choose the missing term in the series.
1, 1, 8, 4, 27, _____, 64, 16
a. 27 b. 11
c. 9 d. 125

PYQ July 21

(12) The wrong term in the series 225, 196, 169, 144, 121, 100, 77, 64, is:
a. 121 b. 77
c. 100 d. 169

PYQ Dec. 21

(13) What comes at the last place in R, U, X, A, D.....?
a. E b. F
c. G d. H

PYQ Dec. 21

(14) The missing term of the series 4, 13, ..., 49, 76 is
☆ a. 26 b. 28
c. 30 d. 32

PYQ June 22

(15) 7, 26, 63, 124, 215, 342_____?
a. 511 b. 672
c. 508 d. 556

PYQ June 22

(16) 4, 6, 9, 13.5, _____, 30.375
a. 40.50 b. 20.25
☆ c. 40.75 d. 60.25

PYQ June 22

(17) Find out the next term –
7, 11, 27, 63, 127, _____
☆ a. 511 b. 227
c. 5100 d. 255

PYQ June 22

(18) Find the next terms-
3, 7, 15, 31, ?, 127
a. 62 b. 63
c. 64 d. 65

PYQ June 22

(19) Find out the next term –
6, 13, 28, 59, ?
a. 122 b. 114
c. 113 d. 112

PYQ Dec 22

(20) Find the missing number in the following series?
3, 5, 5, 19, 7, 41, 9, ?, 11, 109
a. 71 b. 61
c. 69 d. 79

PYQ Dec 22

(21) Find the next number in the given sequence?
11, 17, 39, 85, ?, 281, 447
☆ a. 133 b. 143
c. 153 d. 163

PYQ Jun 23

(22) The number in place of question mark in: 7, 26, 63, 124, 215,?, 511 is
a. 342 b. 343
c. 441 d. 421

PYQ Jun 23

(23) Find the next number in the series: Q1F, S2E, U6D, W21C,…..?
a. Y66B b. Y44B
c. Y88B d. Z66B

Answer Key

1	b	2	c	3	a
4	c	5	b	6	d
7	c	8	c	9	a
10	c	11	c	12	b
13	c	14	b	15	a
16	b	17	b	18	b
19	a	20	a	21	d
22	a	23	c		

Number Series and Alphabet Series

Mock Test Questions

MTP May 18

(1) 18, 24, 21, 27, ?, 30, 27
a. 33 b. 30
c. 24 d. 21

MTP May 18

(2) 5, 7, 11, ?, 35, 67
a. 23 b. 28
☆ c. 30 d. 19

MTP May 19

(3) Find the missing term of the number series 24, 60, 120, 210,?
☆ a. 300 b. 336
c. 420 d. 525

MTP May 19

(4) Find the missing term of the number series 48, 24, 96, 48, 192, …?
a. 76 b. 90
c. 96 d. 98

MTP May 19 Series II

(5) Find the missing number of the series 22, 24, 28, ? , 52, 84
a. 36 b. 38
c. 42 d. 46

MTP May 19 Series II

(6) Find the missing number of series 1, 5, 13, 25, 41, ?
a. 51 b. 57
c. 61 d. 63

MTP Nov 19

(7) Find the missing term of the series 17, 14, 15, 12, 13, ?, ?
a. 10, 11 b. 14, 11
c. 11, 13 d. 12, 13

Remove | MTP Nov 19

(8) a_c_ba_ca_cb
a. abcc b. acba
☆ c. bcaa d. bcba

MTP May 20

(9) Find missing term 7, 26, 63, 124, 215, 342?
a. 391 b. 421
c. 481 d. 511

MTP May 20

(10) Find missing term of the alphabet series ABD, DGK, HMS, MTB, SBL?
a. XKW b. ZAB
c. ZKU d. ZKW

MTP Nov 20

(11) Find next number in the following series 7, 11, 13, 17, 19, 23, 25, 29?
a. 30 b. 31
c. 32 d. 33

MTP Nov 20

(12) Find the alphabet missing series ac_cab_baca_a_ab
a. aabc b. aacb
c. babb d. bcbb

MTP March 21

(13) Find the missing term of the series 27,32,30,35, 33, ?
a. 28 b. 31
c. 36 d. 38

MTP March 21

(14) Find out the letter series AZY, EXW, IVU, ?
a. MTS b. MQR
c. NRQ d. LST

MTP Apr 21

(15) Find next number in the following series 7, 11, 13, 17, 19, 23, 25, 29,?
a. 30 b. 31
c. 32 d. 33

MTP Nov 21

(16) Which number should come next (7, 13, 13, 14, 19, 15?
a. 15 b. 25
c. 19 d. none of these

MTP Nov 21

(17) Find out the next term of the series 4, 25, 121, 289, _____
a. 529 b. 441
c. 625 d. none of these

MTP Oct 21

(18) Find next term of the series 3,10,29,66, 127,?
a. 164 b. 187
c. 216 d. 218

MTP Oct 21

(19) Which number should come next 7, 26,63,124,215, 342,?
a. 391 b. 421
c. 481 d. 511

MTP March 22

(20) The missing term of the series 11, 10 __27, 66.5, 198.5
☆ a. 14 b. 16
c. 21 d. 19

MTP March 22

(21) What comes at last place in R, U, X, A, D, ?
a. E b. F
c. G d. H

MTP June 22

(22) Find missing term of the series 2, 3,3,5, 10, 13, ?
C , 43, 172, 177
a. 23 b. 38
c. 39 d. 40

MTP June 22

(23) Find missing term of the letter series A, CD, GHI, UVWXY
☆ a. LMNO b. MNO
c. MNOP d. NOPQ

MTP Dec 22 – Series I

(24) Find the missing term in each of the following series: 6, 13, 25, 51, 101.
a. 201 b. 202
c. 203 d. 205

MTP Dec 22 – Series I

(25) Find the missing term in each of the following series : 28, 33,31,36, 34,?
a. 48 b. 39
c. 54 d. 62

MTP Dec 22 Series II

(26) Find the missing term of the following series : 3, 15, ?, 63,99, 143
a. 27 b. 35
c. 45 d. 56

MTP Dec 22 Series II

(27) Find the missing term of the following series: 7, 26, 63, 124, 215, 342?
a. 391 b. 421
c. 481 d. 511

MTP Dec 22 Series II

(28) Find the missing term of the following series: 3,7, 15, ?, 63, 127
a. 30 b. 31
c. 47 d. 52

MTP June 2023 Series I

(29) Find the next alphabet series in the given sequence? ALN, DNR, GPR?
a. KLN b. JRT
c. RNU d. RNV

MTP June 2023 Series I

(30) Find the missing number in the following series? 2, 15, 10, 17, 26?
a. 49 b. 47
c. 37 d. 36

MTP June 2023 Series II

(31) Find next term of the series 10, 69, 236, 595,?
a. 1254 b. 1020
c. 1320 d. 1200

MTP June 2023 Series II

(32) Which number will come next in the following series? 675, 623, 573, 525?
a. 1254 b. 1020
c. 1320 d. 1200

MTP June 2023 Series II

(33) Identify the sequence of letters and find out the missing number. AGM, DJP, HNT, _____
a. MSY b. NTZ
c. LRX d. KQW

MTP June 2023 Series II

(34) 105, 115.5, 150, 162.5, 203,?
a. 217 b. 217.5
c. 210.5 d. None of these

Answer Key

1	c	2	d	3	b
4	c	5	a	6	c
7	a	8	d	9	d
10	d	11	b	12	b
13	d	14	a	15	b
16	b	17	a	18	d
19	d	20	a	21	c
22	c	23	c	24	c
25	b	26	b	27	d
28	b	29	b	30	c
31	a	32	b	33	a
34	b				

Coding and Decoding

Past Exam Questions

PYQ May 18

(1) In a certain code, RIPPLE is written as 613382 and LIFE is written as 8192. How is PILLER written in that code?
a. 318826 b. 318286
c. 618826 d. 338816

PYQ May 18

(2) In a certain code '256' means 'you are good'. '637' means 'we are bad' and '358' means 'good and bad'. Which of the following represents 'and' in that code?
a. 2 b. 5
c. 8 d. 3

PYQ May 18

(3) If LOSE is coded as 1357 and GAIN is coded as 2468, what do figure 82146 for?
a. NGLAI b. NGLIA
c. GNLIA d. GNLA

PYQ Nov. 18

(4) If PLAY is coded as 8123 and RHYME is coded as 49367. What will be code of MALE?
a. 6217 b. 6198
c. 6395 d. 6285

PYQ Nov. 18

(5) If HONEY is coded as JQPGA, which word is code as VCTIGVU?
a. CARPETS b. TRAPETS
c. TARGETS d. UMBRELU

PYQ June 19

(6) If in a Certain language, MADRAS is coded as NBESBT, How DELHI is coded in that code?
a. EMMJI b. EFMIJ
c. EMFIJ d. JIFEM

PYQ Nov. 19

(7) In a certain code MADRAS is NBESBT now DELHI is coded as:
a. EMMJI b. JIFEM
c. EFMIJ d. CDKGH

PYQ Nov. 20

(8) If HEALTH is written as IFBMUL, then how will NORTH be written in that code?
a. OPSUL b. GSQNM
c. FRPML d. IUPSO

PYQ Jan. 21

(9) In a certain Code Language BEAT is written as YVZG, then what will be Code for MILD?
☆ a. ONRW b. NOWR
c. ONWR d. NROW

PYQ Jan. 21

(10) In a certain code RIPPLE is written as 613382, and LIFE is written as 8192. How will RIFFLE be written in that code?
a. 618892 b. 689912
c. 619982 d. 629981

PYQ July 21

(11) If DELHI is coded as EFMII then JAIPUR is coded as _____

a. JQVSBK b. QVSKBJ
c. BJQVSK d. KBJQVS

PYQ July 21

(12) If FRAME is coded as 0618011305 then ARISE is coded as_____

a. 0118091905 b. 0119091805
c. 0118190905 d. 0118091805

PYQ July 21

(13) If CLOCK is coded as 34235 and TIME as 8679, then MOTEL is coded as:

a. 27894 b. 72964
c. 72894 d. 77684

PYQ Dec. 21

(14) If MOUSE, is coded as 34651 and KEY is coded as 217, then how will YES be coded?

a. 715 b. 517
c. 175 d. 571

PYQ Dec. 21

(15) ☆ In a certain code, MENTION is written as LNEITNO. How is PRESENT written in that code?

a. NTSEREO b. OERESTN
c. ERESTNO d. ROESTNE

PYQ Dec. 21

(16) In a certain code "THANKS" is written as "SKNTHA" then how is "STUPID" written?

a. DIPUTS b. DISPUT
c. DIPUST d. DIPSTU

PYQ June 22

(17) LOTUS is coded as 14682 and STRANGE is coded as 2690753. How will you code GESTURE

a. 5236893 b. 5326793
c. 5346893 d. 5326893

PYQ June 22

(18) Code for word EARTH is 16235 and VENUS is 91784 what is code for SATURN?

a. 423827 b. 463827
c. 463877 d. 413827

PYQ Dec 22

(19) ☆ If 'FROZEN' is decoded as 'OFAPSG'. Tick the right option that depicts 'MOLTEN' written in this way?

a. OFPOMN b. OFSMPN
c. OFUMPN d. OFUNPN

PYQ Dec 22

(20) In certain code language, if TOUR, is written as 1234, CLEAR is written 56784 and SPACE is written as 90847, find the code for CARE?

a. 1247 b. 4847
c. 5247 d. 5847

PYQ Dec 22

(21) If ROSE 'is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for SEARCH?

a. 246173 b. 214673
c. 216473 d. 214763

PYQ Jun 23

(22) In a certain code, MENTION is written as LNEITNO. How is PRESENT written in that code?

a. QFSETUM b. ONESERP
c. QRESTNO d. OERESTN

Answer Key

1 a	2 c	3 a
4 a	5 c	6 b
7 c	8 a	9 d
10 c	11 d	12 a
13 c	14 a	15 b
16 d	17 d	18 b
19 c	20 d	21 b
22 d		

Coding and Decoding

Mock Test Questions

MTP May 18

(1) If GARDEN is coded as 325764 and WATER as 92165, how can we code the word WARDEN in the same way?

a. 925764 b. 295764
c. 952764 d. 957264

MTP May 18

(2) If F=6, MAT=34, then how much is CAR?

a. 21 b. 22
c. 25 d. 28

MTP Nov 18

(3) In a certain code language "EXAM' is coded as 39 'PAPER' is coded at 51 then PASS is coded as

a. 39 b. 47
c. 489 d. 51

MTP Nov 18

(4) In a certain language MADRAS is coded as NBESBT, how BOMBAY is coded in that language?

a. CPNCBX b. CPNCBZ
c. CPOCBZ d. CQOCBZ

Note: Ans incorrect in MTP

MTP May 19

(5) GO = 32, SHE = 49, then SOME will be equal to

a. 56 b. 58
☆ c. 62 d. 64

MTP May 19

(6) in a certain Code DECEMBER is written as ERMBCEDE. Which word will be written as ERMBVENO in that code?

a. AUGUST b. SEPTEMBER
c. OCTOBER d. NOVEMBER

MTP May 19 Series II

(7) If SUMMER is coded as RUNNER the code for WINTER will be

a. SUITER b. VIOUER
c. WALKER d. SUFFER

MTP May 19 Series II – Error in MTP

(8) In a certain code KAVERI is written as VAKIRE. How is MYSORE written in that code?

a. EROSYM b. SYMORE
c. SMYERP d. SYMERO

Note: Ans incorrect in MTP

MTP Nov 19

(9) In a certain language TWINKLE is written as SVHOJKD, then how would FILTERS be written in the same code?

a. EHKUDQR b. ITNFKD
c. KVOHMF d. TIMFKD

MTP Nov 19

10) If 'MEAT' is written as 'TEAM', then 'BALE' is written as

a. ELAB b. EABL
c. EBLA d. EALB

MTP May 20

(11) In a certain language, FLOWER is coded UOLDVI, then how is TERMINAL coded in that language?

a. FLKPMROZ b. GVINRMZO
c. RVNIGLKA d. MNIVGYEO

MTP May 20

(12) If PLAY is coded as 8123 and RHYME is coded as 49367. What will be code of MALE?

a. 6217 b. 6198
c. 6395 d. 6285

MTP March 21

(13) If TWENTY is written as 863985 and ELEVEN is written as 323039 , then TWELVE can be coded

a. 863203 b. 863302
c. 863320 d. 683302

MTP March 21

(14) If 'LOSE' is coded 1357 and 'GAIN' is coded as 2468 What do the figure 82146 for

a. NGLAI b. NGLIA
c. GNLIA d. GNLAI

MTP March 21

(15) If B = 2 and BAG = 10, then BOX =?

a. 36 b. 39
c. 41 d. 52

MTP Apr 21

(16) If DELHI is coded as 73541 and CALCUTTA as 82589662, then CALICUT be coded as?

a. 8251896 b. 82518 69
c. 8521896 d. 8258196

MTP Nov 21 – Error in MTP

(17) In a certain code, "Delhi is capital" is coded as "7 5 9", "capital are beautiful" is coded as "3 6 9", "Delhi is beautiful" is coded as "6 7 5", "Patna also capital" is coded as "9 2 4". What is code for "beautiful" ?

a. 2 b. 4
c. 6 d. 9

Note: Ans incorrect in MTP

MTP Nov 21

(18) If 'SYSTEM' is coded as 131625 then 'TERMS 'will be coded as ?

a. 62251 b. 62451
c. 64251 d. 62415

MTP Oct 21

(19) In a certain code 'SOUTHERN' is written as 'UVPTMQDG'. How is 'MARIGOLD' written
☆ in that code?

a. JSBCNFKS b. JSBNHPME
c. JSBNCKNF d. NBSKCJNF

MTP Oct 21

(20) In a certain code 'PRISM' is written as 'OSHTL' and 'RUBLE' is written as 'QVAMD'. How will 'WHORL' be written in that code?

a. XISPM b. VINSK
c. UINSK d. XGPQM

MTP March 22

(21) If Z = 52 and ACT = 48, then BAT will be equal to

☆ a. 39 b. 41
c. 44 d. 46

MTP March 22

(22) If ROSE is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for SEARCH?

a. 246173 b. 214673
c. 214763 d. 216473

MTP March 22

(23) If E = 5 and READ is coded as 7, then what is the code of 'DEAR' ?

☆ a. 6 b. 7
c. 8 d. 9

MTP June 22

(24) In a certain code TELEPHONE is written as ENOHPELET. How is ALIGATOR written in that code?

a. ROTAGILA b. ROTAGAIL
c. ROTAGILE d. ROTEGILA

MTP June 22

(25) In a certain Code, 'CLOUD' is written as 'GTRKF'. How is 'SIGHT' written in that code?

☆ a. UGHHT b. UHJFW
c. WFJGV d. WGJHV

MTP Dec 22 – Series I

(26) In a certain code, TEACHER is written as VGCEJGT, How is CHILDREN written in that code?

a. EJKNEGTP b. EGKNEITP
c. EJKNFGTO d. EJKNFTGP

MTP Dec 22 – Series I

(27) In a certain code language, '253' means 'books are old'; '546' means 'man is old' and '378' means 'buy good books'. What stands for 'are' in that code?

☆ a. 2 b. 4
c. 5 d. 6

MTP Dec 22 – Series I

(28) If SUMMER is coded as RUNNER, the code for WINTER will be

a. SUITER b. VIOUER
c. WALKER d. SUFFER

MTP Dec 22 Series II

(29) In a certain code language, '253' means 'books are old'; '546' means 'man is old' and '378' means 'buy good books'. What stands for 'are' in that code?

a. 2 b. 4
c. 5 d. 6

MTP June 2023 Series I

(30) If GOODNESS is coded as HNPCODTR, then how GREATNESS can be written in that code?

a. HQZSMFRT b. HQFZUFRTM
c. HQFZUODTR d. HQFZUMFRT

MTP June 2023 Series I

(31) In certain code language, if TOUR, is written as 1234, CLEAR is written 5678 and SPACE is written as 90847, Find the code for TEARS ?

a. 17847 b. 14847
c. 15247 d. 17849

MTP June 2023 Series I

(32) If ROSE 'is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for RESEARCH?

a. 61246173 b. 61214673
c. 61216473 d. 61214743

MTP June 2023 Series II

(33) In certain code language, BOARD is coded as CQDVI, what is the code for the word CONSULTING?

a. DQQWZRARNQ
b. DQQWZARQWQ
c. DQQWZRAQWQ
d. None of these

MTP June 2023 Series II

(34) In a certain code language if CAMP is written as 9, then in the same code how will the word TEAM be written?

a. 14 b. 19
c. 27 d. 33

Answer Key

1	a	2	b	3	d
4	b	5	a	6	d
7	b	8	d	9	a
10	d	11	b	12	a
13	a	14	a	15	c
16	a	17	c	18	b
19	c	20	b	21	d
22	b	23	b	24	a
25	d	26	d	27	a
28	b	29	a	30	d
31	d	32	b	33	c
34	c				

Odd Man Out

Past Year Exam Questions

PYQ Nov. 18

(1) Find odd man out of the following series 15, 21, 63, 81, 69

a. 15 b. 21
c. 63 d. 81

PYQ Nov. 18

(2) Find odd man out of the following 7, 9, 13, 17, 19

a. 7 b. 9
c. 19 d. 13

PYQ June 19

(3) Which of the following is odd one 4, 12, 44, 176, 890.....

☆ a. 4 b. 12
c. 44 d. 176

PYQ June 19

(4) Which of the following is odd one?

a. CEHL b. KMPT
c. OQTX d. NPSV

PYQ Nov. 19

(5) Find the odd man out 5, 10, 17, 27, 37:

a. 5 b. 17
c. 27 d. 10

PYQ Nov. 19

(6) SYSTEM is coded as 131625 then TERMS will be coded as?

a. 62251 b. 62451
c. 64251 d. 62415

PYQ Nov. 19

(7) Find the odd one out: 1, 5, 14, 30, 49, 55, 91

A a. 49 b. 30
c. 55 d. 91

PYQ Nov. 20

(8) Which of the following is the odd one: 6, 9, 15, 21, 24, 26, 30.

a. 30 b. 24
c. 26 d. 9

PYQ Jan. 21

(9) Find out the odd man out in the Sequence 8, 25, 64, 125, 216.

a. 25 b. 64
c. 125 d. 216

PYQ Dec. 21

(10) Find the odd one from the following:

a. Zebra b. Giraffe
☆ c. Horse d. Tiger

PYQ Dec. 22

(11) Find the odd man out:
34, 105, 424, 2123, 12756

a. 12756 b. 2123
c. 424 d. 34

PYQ Jun 23

(12) Out of following 41, 43, 47, 53, 61, 71, 83, 95 the odd man out shall be

a. 95 b. 83
c. 71 d. 53

PYQ Jun 23

(13) Find the odd man out in the following series: 190, 145, 136, 352, 460, 324, 631, 244.

a. 136 b. 244
c. 460 d. 324

Answer Key

1	d	2	b	3	c
4	d	5	c	6	b
7	a	8	c	9	a
10	d	11	b	12	a
13	d				

Odd Man Out

Mock Test Paper Questions

MTP May 18

(1) 1, 4, 9, 16, 20, 36, 49

a. 1 b. 9
c. 20 d. 36

MTP May 18

(2) 16, 25, 36, 72, 144, 196, 225
a. 36 b. 72
c. 196 d. 225

MTP Nov 18

(3) Find the odd man out
a. January b. April
c. July d. October

MTP Nov 18

(4) Find the odd man out of the series 5, 10, 17, 25
a. 5 b. 10
c. 17 d. 25

MTP May 19 series II

(5) Find odd one out of the series 7, 9, 11, 12, 14, 15
a. 15 b. 14
c. 9 d. 7

MTP May 19 series II

(6) Find odd one out of the series 37, 45, 49, 65, 79
a. 37 b. 45
c. 49 d. 65

MTP Nov 19

(7) Find out the odd one out of the series 5, 27, 61, 122, 213, 340, 509
a. 27 b. 61
c. 122 d. 509

MTP May 20

(8) Find the wrong term of the series 121, 143, 165, 186, 209
a. 143 b. 165
c. 186 d. 209

MTP May 20

(9) Find odd man out of the series 145, 197, 257, 325, 399
a. 145 b. 399
c. 257 d. 325

MTP Nov. 20

(10) Find odd man out of the following series 41, 43, 47, 53, 61, 71, 73, 81
a. 41 b. 47
c. 61 d. 81

MTP Nov. 20

(11) Find wrong number of the series 22, 37, 52, 67, 84, 97
a. 52 b. 84
c. 97 d. 67

MTP Apr 21

(12) Find odd man out of the following series 15, 21, 63, 81, 69
a. 15 b. 21
c. 63 d. 81

MTP Apr 21

(13) Which of the following is odd one
a. CEHL b. KMPT
c. OQTX d. NPSV

MTP Nov. 21

(14) Find out the wrong number 2, 10, 18, 54, 162, 486, 1458
a. 18 b. 10
c. 54 d. 162

MTP Oct. 21

(15) Find out the wrong number 10, 14, 28, 32, 64, 68, 132
a. 28 b. 32
c. 64 d. 132

MTP June 22

(16) Find wrong number of the series 1, 5, 5, 9, 7, 11, 11, 15, 12, 17
a. 11 b. 12
c. 17 d. 15

MTP Dec 22 series II

(17) Find odd man out of the following series 3, 4, 10, 32, 136, 685, 4116
a. 10 b. 32
c. 136 d. 4116

MTP June 2023 Series I

(18) Find the odd man out: 34, 105, 424, 2125, 12755.
a. 12755 b. 2125
c. 424 d. 34

Answer Key

1 c	2 b	3 b
4 d	5 b	6 c
7 a	8 c	9 b
10 d	11 b	12 d
13 d	14 b	15 d
16 b	17 b	18 a

Chapter 10: Direction Test

Finding Final Direction

Past Year Questions

PYQ May 18

(1) X walks southwards and then turns right, then the left and then right. In which direction is he moving now?

a. South b. North
c. West d. South-west

PYQ May 18

(2) Raman starts walking in the morning facing the sun. After sometime, he turned to the left, later again he turned to his left. In what direction is Raman moving now?

a. East b. West
c. South d. North

PYQ May 18

(3) You go North, turn right, then right again and then go to the left. In which direction are you now?

a. South b. East
c. West d. North

PYQ Nov. 18

(4) A man started to walk East, After moving a distance, he turned to his right. After moving a distance, he turned to his right again. After moving a little he turned in the end to his left. In which direction was he going now?

a. East b. West
c. North d. South

PYQ June 19

(5) Sangeeta leaves from her home. She first walks 30 meters in north-west direction and then 30m in south west direction, next she walks 30 meters in south-east direction. Finally she turns towards her house. In which direction is she moving now.

a. North – West b. North – East
c. South – East d. South – West

PYQ June 19

(6) Madhuri moved a distance of 75 meters toward north. She then turned to her left and walked for about 25m, turned left again and walked 80m. Finally, she turned to her right at an angle of 45^0. In which direction was she moving now?

a. South – East b. South – West
c. North – West d. North – East

PYQ June 19

(7) ☆ A person facing North moves 70^0 in clockwise direction. He again moved 300^0 in clockwise direction. In which direction is he facing now?

a. North – West b. South – East
c. North – East d. South – West

PYQ Nov. 19

(8) A man stands on a point and starts walking towards north. He then turns left, then turns right, and then left. In which direction he is moving now?

a. West b. North
c. East d. South

PYQ Nov. 19

(9) A man started from a point facing north, then turned left, then again left, and then right. In which direction he is facing now?

a. East b. West
c. North d. South

PYQ Nov. 19

(10) Rohan is driving cycle from house towards north, he turns left and then left again. Which direction he is facing now?

a. East b. West
c. North d. South

PYQ Nov. 20

(11) A man is facing west he turns 45 degrees in the clockwise direction and then another 180 degrees in the same direction and then 270 degrees in the anticlockwise direction. Which direction is he facing now?

a. South – West b. North – West
c. West d. South

PYQ Jan. 21

(12) ☆ A man is facing west. He turns 45^0 in the clockwise direction and then another 180^0 in the same direction and then 270^0 in the anti -clockwise direction. Which is the facing now?

a. South – West b. North – West
c. West d. South

PYQ July 21

(13) One morning after sunrise, Vikram and Shailesh were standing in a down with their ☆ back towards each other. Vikram's shadow fell exactly towards left hand side. Which direction was Shailesh facing?

a. South – West b. West
c. South d. East – South

PYQ Dec. 21

(14) A man starts from a point, walks 4 miles towards North and turns left and walks 6 miles, turns right and walks for 3 miles and again turns right and walks 4 miles and takes rest for 3 minutes. He gets up and walks straight 2 miles in the same direction and turns right and walks one mile. What is the direction he is facing?

a. North b. South
c. South – East d. West

PYQ June 22

(15) A sign board pointing direction towards north due to heavy wind. The points of sign word ☆ shows west instead of North. If a person moves to same direction of pointer. He moves 100 meter than turn left, and moves 100 meter than again turn left and move 100 meter than he turn right & moves 100 meter. In which direction he is now?

a. West b. East
c. North d. South

PYQ June 22

(16) If Ramu faces West and moves 5 km in the direction then takes a left turn and moves 10 km ☆ then take another left turn and moves 15 km in same direction then moves 10 km in the north direction and reaches point A. What is the distance between the starting point and A and in which direction is Ramu facing now?

a. 10 km, North b. 5 km, South
c. 10 km, South d. 5 km, North

PYQ June 22

(17) A person facing in North moves 70^0 in Clockwise direction. He again moved 300^0 in anti clockwsise direction. In which direction is he facing now?

a. North – West b. South – East
c. North – East d. South – West

PYQ Dec. 21

(18) A man is facing West. He turns 45 degree in the clockwise direction and then another 180 degree in the same direction and then 270 degree in the anticlockwise direction. Find which direction he is facing now?

a. South – East b. West
c. South d. South - West

Answer Key

1	c	2	b	3	b
4	d	5	b	6	b
7	c	8	a	9	b
10	d	11	a	12	a
13	c	14	b	15	d
16	a	17	b	18	d

Finding Final Direction

Mock Test Paper Questions

MTP May 18

(1) Mohan starts from point A and walks 1 km towards south, turns left and walks 1 km. Then he turns left again and walks 1 km. Now he is facing

a. East b. West
c. North d. South-west

MTP May 18

(2) Roopa starts from a point and walks 15 metre towards west, turns left and walks 12 metre, turns right again and walks. What is the direction she is now facing?

a. south b. west
c. East d. north

MTP May 18

(3) A car travelling from south covers a distance of 8 kms, then turns right and runs another 9 kms ☆ and again turns to the right and was stopped. Which direction does it face now?

a. South b. North
c. West d. East

MTP May 19

(4) A Driver left his village and drove North for 20 Km, after which he stopped for breakfast. Then he turned left and drove another 30 km, when he stopped for lunch. After some rest, he again turned left and drove 20 kms before stopping for evening tea. Once more he turned left and drove 30 kms to reach the town where he had supper. After evening tea in which direction did he drive?

a. West b. East
c. North d. South

MTP Nov 19

(5) A man starts for his office in the North direction, he turns to his left, and then to his right and again to his right. In which direction he will be facing?

a. North b. South
c. East d. North

MTP Nov 19

(6) Pramila is going towards East. She turns left, moves on same distance and again turns to her left. After walking some distance, she turns to her right and moves on. In which direc tion she is going now?

a. North b. South
c. North-West d. West

MTP May 20

(7) ☆ A man is facing towards East and turns through 45° clockwise again 180° clock wise and then turns through 270° anti-clock wise. In which direction is he facing now?

a. West b. North- East
c. South d. South-West

MTP May 20

(8) ☆ Facing towards North, Ravi walks 35 m. He then turns left and walks 55 m. He again turns left and walks 35 m. How far is from original position and towards which direction.

a. 30 m, North b. 20 m, East
c. 55 m, West d. 20 m, South

MTP May 20

(9) Raju is facing East, he turns 100° in the clockwise direction and 145° in the anti-clock wise direction. Which direction is he facing now?

a. West b. North-East
c. North d. South-East

MTP Nov 20

(10) If a man on motor bike starts from a point and rides 4 km South then turns left and rides 2 km and turn again to the right to ride in which direction is he moving?

a. North
b. West
c. South
d. North

MTP March 21

(11) A man stands on a point and starts walking towards north then turns left then turns right and then left in which direction he is moving.

a. West b. North
c. East d. South

MTP Apr 21

(12) Ramu moved a distance of 75 meters towards North. He then turned to left and walking for about 25 m, turned left again and walks 80m. Finally, he turned to the right at an angle of 45°. In which direction was he moving finally?

a. South-East b. South-West
c. North-West d. North-East

Note: Answer incorrect in MTP

MTP Apr 21

(13) If a man on motor bike starts from a point and rides 4 km South then turns left and rides 2 km and turn again to the right to ride in which direction is he moving?

a. North b. West
c. South d. North

MTP Nov 21

(14) ☆ Sanjay started from his house towards west. After a walking a distance 15 km he turned to the right and walked 10 km, he again turned to the right and walked 5 km. After this he turns left at 135° and covered 10 km in which direction should he is going?

a. South b. South-West
c. South-East d. North –West

MTP Nov 21

(15) ☆ Mamtha moved a distance of 75 m towards north, then she turns to the left and walked to about 25 m, turned left again and walks 80 m. Finally, she turns to the right at angle of 45°. In which direction was she is moving finally?

a. South-East b. South-West
c. North-West d. North-East

Note: Answer incorrect in MTP

MTP Oct 21

(16) Raju walks northwards. After a while, he turns to his right and a little further to his left. Finally, after walking a distance of one kilometre, he turns to his left again. In which direction is he moving now?

a. North b. South
c. East d. West

MTP Oct 21

(17) A man is facing south. He turns 135° in the anticlockwise direction and then 180° in the clockwise direction. Which direction is he facing now?

a. North-East b. North-West
c. South-East d. South-West

MTP March 22

(18) A boy from his home, first walks 20 m in North-West direction then 20 m in South - West direction. Next, he walks 20m South - East direction. Finally, he turns towards his house. In which direction is he moving?

a. North - West b. North-East
c. South – West d. South – East

MTP June 22

(19) Ravi started from the house towards West. After walking a distance of 30 metres, he turned towards right and walked 20 metres. He then turned left and moving a distance of 10 metres, turned to his left again and walked 40 metres. He now turned to the left and walked 5 metres. Finally, he turned to his left. In which direction was he walking now?

a. North b. South
c. East d. South-West

MTP June 22

(20) I am facing South. I turn right and walk 20 meters. Then I turn right again and walk 10 meters. Then I turn left and walk 10 meters and then turning right walk 20 meters. Then I turn right again and walk 60 meters. Which direction am I facing now?

a. North b. North-West
c. East d. North-East

Note: Answer incorrect in MTP

MTP June 22

(21) ☆ Going 50 m to the south of her house Radhika turns left and goes another 20 m. Then turning to the North, she goes 30 m and then starts walking to her house. In which direction is she walking now?

a. North-West b. North
c. South-East d. East

MTP June 22

(22) A man is facing west. He turns 45° in the clockwise direction and then another 180° in the same direction and then 270° in the anticlockwise direction. Which direction is he facing now?

a. South b. North-West
c. West d. South-West

MTP Dec 22 Series II

(23) Shweta moved a distance of 75 meters towards the north. She then turned to the left and walked about 25 meters, turned left again and walked 80 meters. Finally, she turned to the right at an angle of 45°. In which direction was she moving finally?

a. South b. South-West
c. North-East d. North-West

MTP Dec 22 Series II

(24) Pankaj is facing west. He turns 45° in the clockwise direction and then again another turns with 180° in the same direction i.e. clockwise direction, after that he turns 270° in the anticlockwise direction. Which direction is he facing now?

a. North-West b. West
c. South-West d. South

MTP Dec 22 Series II

(25) A man is facing north. He turns 45 degree in the clockwise direction and then another 180 degree in the same direction and then 45 degree in the anticlockwise direction. Find which direction he is facing now?

a. North b. East
c. West d. South

MTP June 2023 Series I

(26) A man is facing west. He turns 45° in the clockwise direction and then another 180° in the same direction and then 270° in the anticlockwise direction. Find which direction he is facing now?

a. South – East b. West
c. South d. South - West

Answer Key

1 c	2 b	3 a
4 b	5 c	6 a
7 b	8 c	9 b
10 c	11 a	12 b
13 c	14 d	15 b
16 d	17 d	18 b
19 a	20 c	21 a
22 d	23 b	24 c
25 d	26 a	

Finding Direction from Starting Point

Past Year Questions

PYQ May 18

(1) Laxman went 15km to North then he turned West and covered 10 kms. Then he turned South and covered 5 km. Finally turning to East he covered 10 km. In which direction he is from his house.

a. East b. West
c. North d. South

PYQ May 18

(2) A man is facing East, then he turns left and goes 10 meter then turns right and goes 5 meter then goes 5 meter to the South and from there, 5 meter to West. In which direction is he from his original place?

a. East b. West
c. North d. South

PYQ Nov. 18

(3) Anoop starts walking towards South. After walking 15 meters, he turns towards North. After walking 20 meters, he turns towards East and walks 10 meters. He then turns towards south and walks 5 meters. In which direction is he from the original position.

a. North b. South
c. East d. West

PYQ Nov. 18

(4) Rahim started from point X and walked straight 5 km west, then turned left and walked straight 2 km, then again turned left and walked straight 7 km. In which direction is he from the point X?

a. North-East b. South-West
c. South-East d. North-west

PYQ Nov. 18

(5) ☆ Manu wants to go to the market. He starts from his house towards North and reaches a crossing after 30m. He turns towards East, goes 10m till the second crossing and turns again, moves towards South straight for 30m where marketing complex exits. In which direction is the market from his house?

a. North b. South
c. East d. West

PYQ June 19

(6) When a person faces north and walks 25m right then turns left and walks 20m, and again turns right and walks 25m, and turns right, and walks 25m, and turns right and walks 40m, in which direction is he now from his starting point?

a. North – West b. North – East
c. South – East d. South – West

PYQ Nov. 19

(7) Mohan started from a point and walked towards west. He took left to reach Sohan's house. In which direction should he move to reach his house:

a. North east b. South east
c. South west d. North west

PYQ Nov. 19

(8) Sun rises behind the tower and sets behind the railway station. In which direction is the tower from railway station?

a. North b. South
c. East d. West

PYQ Nov. 20

(9) ☆ If you are facing North – east and move 10m forward, man left and move 7.5m, then you are

a. North of your initial position
b. South of your initial position
c. East of your initial position
d. None of these

Note: Ideally it should be NE but according to options given option a is more appropriate

PYQ Nov. 20

(10) ☆ A man can walk by having long, medium and short steps. He can cover 60 meters by 100 long steps, 100 meters by 200 medium steps and 80 meters by 200 short steps, he walks taking 5000 long steps, then he turns left and walk by taking 6000 medium steps. He then turns right and walk by taking 2500 short steps. How far (in meters) is he away from his starting point?

a. 5000m b. 4000m
c. 6000m d. 7000m

PYQ Jan. 21

(11) ☆ Ms. N walks 10km towards North from there she walks 6km towards South. Then she walks 3km towards East. How far and in which direction is she with reference to her starting point?

a. 4 km West
b. 6 km West
c. 3 km East
d. 5 km North/East

PYQ July 21

(12) There are four towns P, Q, R and T. Q is the South – West of P, R is to the East of Q and South – East of P and T is to the North of R in line with QP. In which direction of P is T located?

a. North b. North – East
c. East d. South – East

PYQ July 21

(13) ☆ There are four towns P, Q, R, T. Q is to the south west, of P, R is to the east of Q and south – east of P and T is to the north of R in line with QP. In which direction T is located wrt P?

a. North b. North – East
c. East d. South – East

PYQ July 21

(14) ☆ Five friends A, B, C, D, E are staying in the same locality. B's house is to the East of A's house and to the North of C's house. C's house is to the West of D's house. D's house is in which direction with respect to A's house?

a. North – East b. South – East
c. North – West d. South – West

PYQ Dec. 21

(15) ☆ A person walks 1 km (kilometer) towards West and then he turns to South and walks 5 km. Again, he turns to West and walks 2 km. After this he turns to North and walks 9 km. How far is he from his starting point?

a. 3 km b. 4 km
c. 5 km d. 7 km

PYQ Dec. 21

(16) Daily in the morning the shadow of a Clock Tower installed on Railway Station falls on high rise Mall and in the evening the shadow of the same Mall falls on the Clock Tower installed on Railway Station exactly. So in which direction is Clock Tower to Mall?

a. Eastern side b. Western side
c. Northern side d. Southern side

PYQ June 22

(17) If there are 8 polls from A, B, C, D, E, F, G, H. Then B is to the East of A, C is to the South of B, D is to the West of C, E is the South of D, F is to the East of E, G is South of F, H is West of G. Then in which direction is H in respect to A.

a. North b. West
c. South d. East

PYQ Dec 22

(18) ☆ Radha moves towards South – East a distance of 7 km, then she moves towards West and travels a distance of 14 km. From here she moves towards North – West a distance of 7 km. and finally she moves a distance of 4 km. towards East. How far is she now from the starting point?

a. 3 km b. 4 km
c. 10 km d. 11 km

PYQ Jun 23

(19) ☆ Deepika starts walking straight towards east. After walking 65m, she turns to the left and walks 25m straight. Again she turns to the left and walks a distance of 40m. At what distance and in which direction currently she is from the initial point?

a. 35.35 m in North-East
b. 35.35 m in South-West
c. 25m in North
d. 25m in West

PYQ Jul 23

(20) Sunita walks a distance of 2 km towards East, turns left and moves 1 km, then turns left and moves 2 km and then turn left again and moves 1 km, then halts. At what distance Sunita is now from the starting point?

a. 0 km b. 1 km
c. 2 km d. 6 km

Answer Key

1 c	2 c	3 c
4 c	5 c	6 c
7 a	8 c	9 a
10 a	11 d	12 b
13 b	14 b	15 c
16 a	17 c	18 c
19 b	20 a	

Finding Direction from Starting Point

Mock Test Paper Questions

MTP Nov 18

(1) Arun Started from Point A and Walked 10 kms East to Point B , then turned to North and walked 3 kms to point C and then turned West and walked 12 kms to point D , then again turned South and walked 3 kms to point E . In which direction is he form his starting point?

a. East b. South
c. West d. North

MTP May 19

(2) Ramu walks 5 Kms starting from his house towards west then turns right and walks 3 km. Thereafter he takes left turn and walks 2 km. Further, he turn left and walks 3 km. Finally, he turns right and walks 3 kms. In what direction he is now from his house.

a. west b. north
c. south d. north

MTP May 19

(3) A man is facing East, then he turns left and goes 10m then turns right and goes 5 m then goes 5 m to the South and from there 5 m to West. In which direction is be from his original place?

a. east b. west
c. north d. South

MTP May 19 Series II

(4) A man is facing East, then he turns left and goes 10m then turns right and goes 5 m then goes 5 m to the South and from there 5 m to West. In which direction is be from his original place?

a. east b. west
c. north d. south

MTP May 19 Series II

(5) From her home Prerna wishes to go to school. From home she goes towards North and then turns left and then turns right, and finally she turns left and reaches school. In which direction her school is situated with respect to her home?

a. North-East b. North-West
c. South-East d. South-West

MTP May 19 Series II

(6) A child walks 25 feet towards North, turns right and walks 40 feet, turns right again and walks 45 feet. He then turns left and walks 20 feet. He turns left again walks 20 feet. Finally, he turns to his left to walks another 20 feet. In which direction is the child from his starting point?

a. north b. south
c. west d. East

MTP Nov 19

(7) Rajiv walks 10 m South from his house, turns left and walks 25 m, again turns left and walks 40 m, then turns right and walks 5 m to reach the college. In which direction is the college from his house

a. North b. South-West
c. North-East d. East

MTP Apr 21

(8) ☆ Kiran walks 2 km towards North then he turns East and walks 10 km. After this he turns North and walks 3 km .Again he turns towards East and walks 2 km. How far from the starting point?

a. 10 km b. 13 km
c. 15 km d. 17 km

MTP Nov 21

(9) When a person faces north and walks 25 m right, and he turns left and walks 20 m and again he turns right and walks 25 m and turns right25 m and turns right and walks 40 m in which direction is he now from his starting point.

a. North-West b. North –East
c. South- East d. South-West

Note: Incorrect Ans in MTP

MTP Dec 2022 – Series I

(10) From home Neha goes towards North for her college and then she turns left and then turns right, and finally she turns left and reaches college. In which direction her college is situated with respect to her home?

a. South-West b. North-East
c. North-West d. South-East

MTP Dec 22 Series II

(11) ☆ Varun faces towards north. Turning to his right, he walks 25 meters. He then turns to his left and walks 30 meters. Next, he moves 25 meters to his right. He then turns to his right again and walks 55 meters. Finally he turns to the right and moves 40 meters. In which direction is he now from his starting point?

a. South-East b. South-West
c. South d. North-West

MTP Dec 22 Series II

(12) A man walks 5 km south and then turns to the right. After walking 3 km he turns to the left and walks 5 km. Now in which direction is he from the starting place?

a. East b. South
c. North – East d. South - West

Answer Key

1 c	2 a	3 c
4 c	5 b	6 d
7 c	8 b	9 c
10 c	11 a	12 d

Other Problems

Past Year Questions

PYQ May 18

(1) I stand with my right hand extended side-ways towards south. Towards which direction will my back be?

a. North b. West
c. East d. South

PYQ Nov. 20

(2) ☆ One day, Ram left home and cycled 10 km southward, turned right and cycled 5 km and turned right and cycled 10 km and turned left and cycled 10 km. How many kilometers will he have to cycle to reach his home straight?

a. 10 b. 15
c. 20 d. 25

PYQ Jan. 21

(3) One day Ram left home and bi-Cycled 10 km southwards, turned right and travelled 5km and turned right and went 10km he turned left and went 10km how many kilometers he has to cycle to reach his home straight?

a. 10 b. 15
c. 20 d. 25

PYQ July 21

(4) ☆ A and B start moving towards each other from two places 200m apart. After walking 60m, B turns left and goes 20m, then he turns right and goes 40m. He then turns right again and comes back to the road on which he had started walking. If A and B walk with the same speed, what is the distance between them now?

a. 80 m b. 70 m
c. 40 m d. 60 m

PYQ Dec. 21

(5) ☆ R's office is 4 km in East direction from his home and club is 4 km in North direction from his home. On midway from office to club, R starts moving towards his home. In which direction is he facing his back?

a. South – East b. North – West
c. North – East d. South - West

PYQ Dec. 21

(6) ☆ The hour hand of a clock is in west direction when time is 3'O clock. What is the direction of minutes hand when time is 6:45?

a. East b. West
c. North d. South

PYQ June 22

(7) One day Ram left home and cycled 10 km southward, turned right and cycled 5 km and turned right and cycled 10 km and turned left to cycle 10 km. How many kilometers will he have to cycle to reach his home?

a. 10 b. 20
c. 15 d. 25

PYQ Dec 22

(8) ☆ One morning a boy starts walking in a particular direction for 5 km and then takes a left turn and walks another 5 km. thereafter he again takes left turn and walks another 5 km and at last he takes right turn and walks 5 km. Now he sees his shadow in front of him. What direction he did start initially?

a. South b. North
c. West d. East

PYQ Dec 22

(9) ☆ It is 3'o clock in a watch. If the minute hand points towards the North-East then the hour hand will point towards the:

a. South b. South – West
c. North – West d. South - East

PYQ Jun 23

(10) Mr. Kartik puts his time piece on the table in such a way that at 6:00 PM, hours hand points to north. In which direction the minute hand will point at 9:15PM?

a. South-East b. East
c. West d. South-West

PYQ Jun 23

(11) Shrikant is facing East and turns 120° in the clockwise direction and then turns 180° in the anticlockwise direction. Which direction is Shrikant facing now?

a. East b. North-East
c. North d. South-West

PYQ Jun 23

(12) Five boys Ajay, Brijmohan, Chandru, Dheeraj, and Eshaan are sitting in the park in a circle facing the centre. Ajay is facing South-West, Dheeraj is facing South-East, Brijmohan and Ehsaan are right opposite Ajay and Dheeraj, respectively and Chandru is equidistant between Dheeraj and Brijmohan. Which direction is Chandru facing?

a. West b. South
c. North d. East

Answer Key

1 b	2 b	3 b
4 c	5 c	6 a
7 c	8 b	9 d
10 c	11 b	12 d

Other Problems

Mock Test Paper Questions

MTP Nov 18

(1) I Stand with my right hand extended side-ways towards South. Towards which direction will my back be?

a. North b. West
c. East d. South

MTP Nov 19

(2) ☆ Town D is 12 km towards the North of A. Town C is 15 km towards the West of town D. Town B is 15 km towards the west of town A, how far and which direction is town B from town C ?

a. 15 Km towards North
b. 12 Km towards North
c. 3 km towards South
d. 12 km towards South

MTP May 20

(3) Ram start moving from a point, facing in East direction. After walking 15 m, he turned to his left and walked 25m, before turning to his right. Then, he walked a distance of 35 m, then turned to his right and stop after walking further a distance of 25 m. Find how far Ram is from his starting point.

a. 20 m b. 50 m
c. 15 m d. 15 m

MTP Nov 20

(4) If East is replaced by South-East, then West will be replaced by which replaced by which of the following directions?

a. North-East
b. North
c. East
d. North-West

MTP Nov 20

(5) Hema walks 30 km North. Then, she turns right and walks 30 m then she turns right and walks 55 m. Then she turns left and walks 20 m. Then she again turns left and walks 25 m. How many meters away is she from her original position.

a. 45m b. 50m
c. 66m d. 55m

MTP March 21

(6) ☆ One evening before sunset, two friends Ravi and Raj were talking to each other face to face. If Ravi's shadow was exactly to his left side, which direction was Raj facing ?

a. West b. East
c. North d. South

MTP March 21

(7) ☆ If South-West becomes North, then what will be the North-East be?

a. North b. South-East
c. South d. East

MTP Apr 21

(8) I stand with my right hand extended side-ways towards south. Towards which direction will my back be?

a. North b. West
c. East d. South

MTP Nov 21

(9) Kamal starts from point 'O' and moved towards North 2 km, then he turns right and moved 4 km again he turned towards North and walked up to 1 km reached at A. Find the distance between OA.

a. 6 b. 7
c. 4 d. 5

MTP Nov 21

(10) Raju Walked from A to B in the east 10 m, then he turns towards right and walked 3 m. Again, he turned to the right and walked 14 m. how far is from is she from point A?

a. 4 feet b. 5 feet
c. 12 feet d. 13 feet

MTP Oct 21

(11) ☆ Ravi wants to go to the College. He starts from his home, which is in the East and comes to a crossing. The road to the left ends in a theatre, straight ahead is the hospital. In which direction is the College **if college is neither in direction of theatre nor in the direction of hospital?**

a. North b. South
c. East d. West

Note: Que and Ans - not correct in MTP

MTP Oct 21

(12) Rakesh moves towards South-east a distance of 7 km, then he moves towards West and travels a distance of 14 m. From here he moves towards North-west a distance of 7 m and finally he moves a distance of 4 m towards East and stood at that point. How far is the starting point from where he stood?

a. 3m b. 4m
c. 10m d. 11m

MTP Oct 21

(13) A and B start moving towards each other from two places 200 m apart. After walked 60 m, B turns left and goes 20 m, then he turns right and goes 40 m. He then turns right again and comes back to the road on which he had started walking. If A and B walk with the same speed, what is the distance between them now?

a. 20m b. 30m
c. 40m d. 50m

MTP March 22

(14) M is to the East of D, F is to the South of D and K is to the West of F. M is in which direction with respect to K?

a. South-West b. North-West
c. North-East d. South-East

MTP March 22

(15) A cyclist goes 30 km to North and then turning right to goes 40 skm. Again he turns to his right and goes 20 km. After this he turns to his right and goes 40 km. How far is the from his starting point?

a. 0 km b. 10 km
c. 25 km d. 40 km

MTP March 22

(16) Raju leaves his house and walks 12 km towards North. He turns right and walks another 12 km. He turns right, walks 12 km more and turns left to walk 5 km. How far is he from his home and in which direction?

a. 7 km east b. 10 km east
c. 17 km east d. 24 km east

MTP March 22

(17) A child goes 50 meter towards South and then turning to his right, he goes 50 meter. Then, turning to his left, he goes 30 meter. Again he turns to his left and goes 50 meter. How far is he from his initial position?

a. 30 m b. 40 m
c. 50 m d. 80 m

MTP June 22

(18) Raju starts walking straight towards East. After walking 75 metres, he turns to the left and walks 25 metres straight. Again, he turns to the left, walks a distance of 40 metres straight, again he turns to the left and walks a distance of 25 metres. How far is he from the starting point?

a. 25 meters b. 50 meters
c. 115 meters d. 35 meters

MTP Dec 22 – Series I

(19) Y is in the East of X which is in the North of Z. If P is in the South of Z, then in which direction of Y, is P?

a. North b. South
c. South-East d. South-West

MTP Dec 22 – Series I

(20) Five villages P, Q, R, S, and T are situated close to each other. P is to the west of Q, R is to the south of P. T is to the north of Q and S is to the east of T. Then, R is in which direction with respect to S?

a. North-West b. South-East
c. South-West d. Data Inadequat

MTP Dec 22 – Series I

(21) If South-West becomes North, then what will North-East be?

a. North b. South-East
c. South d. East

MTP Dec 22 – Series I

(22) ☆ In a clock at 12 : 30, hour needle is in North direction while minute needle is in South direction. In which direction would be minute needle at 12:45?

a. North-West b. South-East
c. West d. East

MTP Dec 22 Series II

(23) Neha walked 2 km west of her house and then turned south covering 4 km. Finally, she moved 3 km towards east and then again 1 km west. How far is she from her initial position?

a. 7 km b. 3 km
c. 4 km d. 12 km

MTP June 2023 Series I

(24) Ram moves towards South – East a distance of 7 km, then he moves towards West and travels a distance of 14 km from there he moves towards North – West a distance of 7 km and finally he moves a distance of 4 km towards east. How far is he now from the starting point?

a. 3 km b. 4 km
c. 10 km d. 11 km

MTP June 2023 Series I

(25) P, Q, R, and S are playing a game of carom P, R and S, Q are partners, 'S' is to the right of 'R'. If 'R' is facing West, then 'Q' is facing which direction?

a. South b. North
c. East d. West

MTP June 2023 Series I

(26) One morning a boy starts walking in a particular direction for 5 km and then takes a left turn and walks another 5 km, thereafter he again takes left turn and walks another 5 km and at last he takes right turn and walks 5 km. Now he sees his shadow is front of him. What direction he did start initially?

a. South b. North
c. West d. East

MTP June 2023 Series I

(27) It is 3'o clock in a watch. If the minute hand points towards the North – East then the hour hand will point towards the

a. South b. South – West
c. North – West d. South - East

MTP June 2023 Series II

(28) Ram walks 30 km East then turns right and walks for another 16 km. He then again turns right and walks for another 16 km. He then tuns left & walks for another 14 km. Then he turns right & walks for 14 km. How far is he from his initial point?

a. 26 km b. 24 km
c. 22 km d. None of these

MTP June 2023 Series II

(29) If South – East becomes North, North – East becomes West and so on. What will West become?

a. North – East b. North – West
c. South – East d. None

MTP June 2023 Series II

(30) One evening before sunset Rekha and Hema were talking to each other face to face. If Hema's shadow was exactly to the right of Hema, which direction was Rekha facing?

a. North b. South
c. West d. East

Answer Key

1	b	2	d	3	b
4	d	5	b	6	c
7	c	8	b	9	d
10	b	11	a	12	c
13	c	14	c	15	b
16	c	17	d	18	d
19	d	20	c	21	c
22	c	23	c	24	c
25	b	26	c	27	d
28	d	29	c	30	b

Chapter 11 – Seating Arrangements

Linear Arrangements in single row

Past Year Questions

PYQ May 18

(1) Five boys A, B, C, D and E are sitting in a row. A is to the right of B and E is to the left of B but to the right of C. A is to the left of D. Who is second from the left end?

a. D b. A
c. E d. B

PYQ May 18

(2) Five senior citizens are living in a multi-storeyed building. Mr. Manu lives in a flat above Mr. Ashokan, Mr. Lokesh in a flat below Mr. Gaurav, Mr. Ashokan lives in a flat above Mr. Gaurav and Mr. Rakesh lives in a flat below Mr. Lokesh. Who lives in the topmost flat?

a. Mr. Lokesh b. Mr. Gaurav
c. Mr. Manu d. Mr. Rakesh

PYQ May 18

(3) Six children A, B, C, D, E and F are standing in a row. B is between F and D. E is between A and C. A does not stand next to F or D. C does not stand next to D. F is between which of the following pairs of children?

a. B and E b. B and C
c. B and D d. B and A

PYQ May 18

(4) ☆ Five children are sitting in a row. S is sitting next to P but not T. K is sitting next to R, who is sitting on the extreme left and T is not sitting next to K. Who is/are adjacent to S.

a. K + P b. R + P
c. Only P d. P and T

PYQ Nov. 18

(5) ☆ Eight persons A, B, C, D, E, F, G and H are sitting in a line. E sits second right to D. H sits fourth left to D. C and F are immediate neighbours, but C is not immediate neighbour of A. G is not neighbour of E. Only two persons sit between A and E. The persons on left end and right end respectively are

a. G and E b. B and E
c. H and E d. G and B

PYQ May 18, PYQ Nov. 18

(6) Six children A, B, C, D, E and F are sitting in a row. B is between F and D. E is between A and C. However, A does not sit to F or D. C does not sit next to D. Then, F is sitting between

a. B and C b. E and C
c. B and D d. None of these

PYQ Nov. 18

(7) Five students A, B, C, D and E are standing in a row. D is on the right of E, B is on the left of E but on the right of A. D is next to C on his left. The student in middle is

a. B b. E
c. C d. A

PYQ June 19

(8) ☆ Four girls are seated for a photograph. Shikha is to the left of Reena. Manju is to the right of Reena. Reeta is between Reena and Manju. Who is the second left in photograph?

a. Reena b. Manju
c. Reeta d. Shikha

PYQ June 19

(9) In a straight line, there are six persons sitting in a row. B is between F and D. E is between A and C. A does not stand next to F or D, C does not stand next to D. F is between which of the following persons?

a. B and E b. B and C
c. B and D d. B and A

PYQ June 19

(10) Five children are sitting in a row. S is sitting next to P but not T. K is sitting next to R. K is sitting on extreme end. T is not sitting next to K. Who are sitting adjacent to S?

a. K and P b. R and P
c. Only P d. P and T

PYQ June 19

(11) Five boys A, B, C, D and E are sitting in a row. A is to the right of B and E is to the left of B but to the right of C. A is to the left of D. Who is second from the left end?

a. D b. A
c. E d. B

PYQ Nov. 19

(12) Six person are sitting in a circle facing the center. Parikh is between Bablu and Narendra; Ashok is between Chitra and Pankaj. Chitra is on the immediate left of Bablu. Who is on the immediate right of Bablu?

a. Parikh b. Pankaj
c. Narendra d. Chitra

PYQ Nov. 19

(13) C is between A and B, E is at the extreme right and D is on the left of E and right of B. Who is in the middle?

a. A b. B
c. D d. E

PYQ Nov. 19

(14) ☆ 5 person are standing in a line. One of the 2 persons at the extreme ends is a professor and the other is a businessman. An advocate is standing to the right of a student. An author is to the left of the businessman. The student is standing between the professor and advocate. Counting from left, the author is at which place?

a. 2nd b. 3rd
c. 4th d. None of these

PYQ Nov. 20

(15) ☆ Five girls G, H, I, J, K are sitting in a row facing South not necessarily in the same order. H is sitting between G and K, I is immediate right to K, J is immediate to the left of K.

a. J is third to the left of K.
b. G is second to the left of I
c. H is to the right of K
d. H is to the left of G

PYQ Jan. 21

(16) A is seated between D and F at a round table. C is seated opposite to D. E is round adjust to D. Who sit opposite to B?

a. A b. D
c. C d. F

PYQ Jan. 21

(17) Four Indian, A, B, C and D and four Chinese E, F, G and H are sitting in a circle around a table facing the each other in a conference. No two Indians or Chinese are sitting side by side, C who is sitting between G and E is facing D, F is between D and A and facing G, H is to the left of B. Who is sitting left of A?

a. E b. F
c. G d. H

PYQ Jan. 21

(18) Five friends A, B,C, D and E are sitting on a bench. A is sitting next to B; C is sitting next to D, D is not sitting with E; E is at the left end of bench. C is on second position from the right; A is on the right side of B who is the right side of E. A and C are sitting together. What is the position of B?

a. Second from right
b. Centre
c. Extreme left
d. Second from left

PYQ July 21

(19) Five girls are sitting on a bench to be photographed. Seema is to the left of Rani and to the right of Bindu. Mary is to the right of Rani. Reeta is between Rani and Mary. Who is sitting immediate right to Reeta?

a. Seema b. Rani
c. Bindu d. Mary

PYQ July 21

(20) ☆ A, B, C, D and E are sitting on the bench. A is sitting next to B, C is sitting next to D, D is not sitting with B who is not on the left end of the bench. C is on the second position from the right. A is to the right of B and E. A and C are sitting together in which position A is sitting between?

a. C and D b. D and E
c. B and C d. B and D

PYQ July 21

(21) A, B, C, D, E, F and G are sitting in a row facing north:

1. F is to the immediate right of E.
2. E is 4th to the right of G
3. C is the neighbor of B and D
4. Person who is third to the left of D is at one of ends.

Who are to the right of D?

a. E, F and A
b. G, B and C
c. C, B and E
d. G and B only

PYQ Dec. 21

(22) Six children, named as P, Q, R, S, T and U, are sitting is a row, Q is between U and S, T is between P and R, P does not sit next to either U or S. R does not sit next to S. So, U is setting between the pairs ____ of children.

a. Q and T b. Q and R
c. Q and S d. Q and p

PYQ Dec. 21

(23) Five persons A, B, C, D and E are sitting in a row. A sits left to C and C sits left to B. E sits right to B, D sits in between E and B. Who is sitting in the middle?

a. B b. C
c. E d. D

PYQ Dec. 21

(24) Persons M, N, O, P, Q, R, S and T are sitting on a compound wall facing North. O sits fourth left of S; P sits second to the right of S; only two people sit between P and M; N and R are immediate neighbours of each other. N is not an immediate neighbour of M; T is not the neighbour of P. How many persons are seated between M and Q?

a. One b. Two
c. Three d. Four

PYQ Dec. 21

(25) In a line, P is sitting 13th from left. Q is sitting 24th from the right and 3rd left from P. How ☆ many people are sitting in the line?

a. 34 b. 31
c. 32 d. 33

PYQ June 22

(26) Five boys A, B, C, D,E are sitting in a row. A is to the right of B and E is to the left of B, but to the right of C. A is to the left of D. Who is second from the left end?

a. D b. A
c. E d. B

PYQ Dec 22

(27) P, Q, R, and S are playing a game of carrom. P, R and S, Q are partners, 'S' is to the right of ☆ 'R'. If 'R' is facing West, then 'Q' is facing which direction?

a. South b. North
c. East d. West

PYQ Dec 22

(28) P, Q, R, S and T are sitting in a line facing West. P and Q are sitting together. R is sitting ☆ at South end and S is sitting at North end. T is neighbor of Q and R. Who is sitting the middle?

a. P b. Q
c. R d. S

PYQ Dec. 21

(29) Seven friends A,B,C,D,E,F & G are watching movie sitting in a row. E is sitting at one ☆ extreme end. C is sitting second to E. B is sitting between A & C. G is not sitting at any extreme end. A is not at any extreme end. D is sitting immediate to F, who is sitting in the middle?

a. G b. D
c. C d. B

PYQ Jun 23

(30) Pran, Qomal, Ravi, Shalu, Trilok, Urvi, Vasu and Walter are sitting in a row facing North.

(i) Pran is fourth to the right of Trilok
(ii) Walter is fourth to the left of Shalu
(iii) Ravi and Urvi, which are not at the ends, are neighbours of Qomal and Trilok, respectively.
(iv) Walter is immediate left of Pran and Pran is the neighbour of Qomal.

Identify who are sitting at extreme ends

a. Pran and Walter
b. Trilok and Urvi
c. Trilok and Shalu
d. Shalu and Pran

PYQ Dec. 21

(31) Six friends – A, B, C, D, E and F are sitting around a circular table facing towards the centre of the circle. E is not sitting between B and D. A sits to the left of F and C is fourth to the right of A. D is immediate right of E. Who sits second to right to F?

a. C b. A
c. D d. B

Answer Key

1	c	2	c	3	b
4	d	5	a	6	a
7	b	8	a	9	b
10	d	11	c	12	a
13	b	14	c	15	a
16	a	17	a	18	d
19	d	20	c	21	a
22	b	23	a	24	a
25	d	26	c	27	b
28	b	29	d	30	c
31	c				

Linear Arrangements in single row

Mock Test Paper Questions

MTP May 18

(1) There are five houses P, Q, R, S and T. P is right of Q and T is left of R and right of P. Q is right of S. Which house is in the middle?

a. P b. Q
c. T d. R

MTP May 18

(2) Six friends A, B, C, D, E and F are sitting in a row facing towards North, C is sitting between A and E, D is not at the end, B is sitting at immediate right of E, F is not at the right end, but D is sitting at 3rd left of E. Which of the following is sitting to the left of D?

a. A b. F
c. E d. C

MTP Nov 18

(3) There are Five houses A, B, C, C, D, E, A is the right of B and E is left of C and right of A, B is right of D, which house is middle

a. A b. B
c. C d. D

MTP Nov 18

(4) Girls are sitting on a bench, Q is the left of R but on the right of P. S is to be right of R but one left of T. Who are the extremes.

a. P, T b. P, S
c. Q, T d. Q, S

MTP Nov 18

(5) Five friends P, Q, R, S and T are sitting in a row facing North. Here, S is between T and Q and Q is to the immediate left of R. P is to the immediate left of T. Who is in the middle?

a. S b. T
c. Q d. R

MTP Nov 18

(6) In a march past, seven persons are standing in a row. Q is standing left to R but right to P. O is standing right to N and left to P. Similarly, S is standing right to R and left to T. Find out who is standing in middle?

a. P b. Q
c. R d. O

MTP May 19

(7) Six children A, B, C, D, E and F are sitting in a row. B is between F and D. E is between A and C. However, A does not stand next to F or D. C does not stand next to D. F is between which of the following pairs of children?

a. B and E b. B and C
c. B and D d. B and A

MTP May 19

(8) Five students are A,B,C,D and E are standing in arrow . D is on the right of E; B is on the left of E but on right of A. D is next to C on his left. The student in middle is

a. B b. A
c. E d. C

MTP May 19 Series II

(9) In a college party, 5 girls are sitting in a row. F is to the left of M and to the right of O. R is sitting to the right of N but to the left of O. Who is sitting in the middle?

a. O b. R
c. P d. M

MTP May 19 Series II

(10) Five friends P, Q, R, S and T are sitting in a row facing North. Here, S is between T and Q and Q is to the immediate left of R. P is to the immediate left of T. Who is in the middle?

a. S b. T
c. Q d. R

MTP Nov 19

(11) Seven children A, B, C, D, E, F and G are sitting in a row. G is to be right of D and to the ☆ left of B. A is on the right of C, A and D have one child between them. E and B have two children between them. D and F have two person between them. Who is exactly in the middle?

a. A b. C
c. D d. G

MTP Nov 19

(12) Six friends A, B, C, D, E and F are sitting in row facing East. "C "is between 'A' and 'E'. 'B' ☆ is just to the right of 'E but left of D'. 'F' is not right end. How many persons are to the left of E ?

a. 1 b. 2
c. 3 d. 4

MTP May 20

(13) Six friends A, B, C, D, E and F are sitting on a bench, facing towards North.

1. A is sitting next to B.
2. C is sitting left to D.
3. D is not sitting with E
4. E is on the left end of the bench.
5. C is third position from right.
6. A is on the right side of B and to the right side of E.
7. A and C are sitting together.
8. F is sitting Right of D.

At what position A is sitting?

a. Between B and C
b. Between D and C
c. Between E and D
d. Between C and E

MTP May 20

(14) Six friends A, B, C, D, E and F are sitting on a bench, facing towards North.

9. A is sitting next to B.
10. C is sitting left to D.
11. D is not sitting with E
12. E is on the left end of the bench.
13. C is third position from right.
14. A is on the right side of B and to the right side of E.
15. A and C are sitting together.
16. F is sitting Right of D.

What is position of B?

a. Second from right
b. Centre
c. Extreme left
d. Second from left

MTP May 20

(15) Six friends A, B, C, D, E and F are sitting on a bench, facing towards North.

17. A is sitting next to B.
18. C is sitting left to D.
19. D is not sitting with E
20. E is on the left end of the bench.
21. C is third position from right.
22. A is on the right side of B and to the right side of E.
23. A and C are sitting together.
24. F is sitting Right of D.

What is position of D?

a. Extreme from left
b. Extreme right
c. Third from left
d. Second from right.

MTP May 20

(16) Six Children A, B, C, D, E and F are sitting in a row facing towards North. C is sitting between A and E, D is not at the end. B is sitting immediate right of E, F is not at the right of end, but D is sitting 3rd left of E. Which of the following is right of D.

a. A b. F
c. E d. C

MTP May 20

(17) Five Friends are sitting on a bench. A is to the left of B but on the right of C, D is to the right ofB but one the left of E. Who are at the extremes?

a. A, B b. A, D
c. C, E d. B, D

MTP Nov 20

(18) Six friends A, B, C, D, E and F are sitting in a row facing East. 'C' is between 'A 'and 'E'. 'B' is just to the right of E' but left of 'D'. 'F' is not the right end . How many persons are Left of 'E' ?

a. 1
b. 2
c. 3
d. 4

MTP Nov 20

(19) In a straight line there are six persons sitting in a row? B is between F and D. E is between A and C. A does not stand next to F or D, C does not stand next to D. F is between which of the following?

a. B and E
b. B and C
c. B and D
d. B and A

MTP March 21

(20) Six children A, B, C, D, E and F are sitting in a row facing north. B is between F and D. E is between A and C. A does Not Stand next to F and D. C does not stand next to D. F is between which of the following pairs of children?

a. B and E
b. B and C
c. B and D
d. B and A

MTP March 21

(21) Five boys A, B, C, D and E are sitting in a row facing north. A is to the immediate right of B and E is on the immediate left of B but on the right of C and A is on the left of D. Who is second from the left end?

a. D
b. A
c. E
d. B

MTP Apr 21

(22) In a straight line there are six person sitting in a row? B is between F and D. E is between A and C. A does not stand next to either F or D, C does not stand next to D. F is between which of the following?

a. B and E
b. B and C
c. B and D
d. B and A

MTP Apr 21

(23) Five boys A, B, C, D and E are sitting in a row. A is to the right of B and E is to the left of B but to the right of C. A is to the left of D. Who is second from left end

a. A
b. B
c. D
d. E

MTP Nov 21

(24) Five students A, B, C, D, and E are standing in a row. D is right on the E; B is on the left of E but on the right of A. D is next to C on his left. The student in middle is

a. B
b. E
c. C
d. A

MTP Nov 21

(25) Five children are sitting in row. S is sitting next to P but not T. K is sitting next to R, who is sitting on the extreme left and t is not sitting next to K . Who are adjacent to S.

a. K+P
b. R+P
c. Only P
d. P and T

MTP Oct 21

(26) A group of seven singers, facing the audience, are standing in a line on the stage as follow.

☆
1. D is the right of C.
2. F is stand beside G.
3. B is to the left of F.
4. C and B are one person between them.
5. A and D have one person between them

Who is sitting on the second from extreme right?

a. D
b. F
c. G
d. E

Note: Incomplete Que in MTP (Corrected here)

MTP March 22

(27) 1. P, Q, R, S, T, U and V are sitting on a wall and all of them are facing West.

☆
2. S is on the immediate left of R.
3. T is at an extreme end and has Q as his neighbor.
4. V is between Q and U.
5. S is sitting third from the north end.

Who is sitting to the left of S ?

a. Q
b. U
c. T
d. R

MTP March 22

(28) 1. P, Q, R, S, T, U and V are sitting on a wall and all of them are facing West.
2. S is on the immediate left of R.
3. T is at an extreme end and has Q as his neighbor.
4. V is between Q and U.
5. S is sitting third from the north end.

Which of the following pairs of people are sitting at the extreme ends?

a. QV
b. PR
c. TP
d. ST

MTP March 22

) Five girls are sitting on a bench to be photographed. Seema is to the left of Rani and to the right of Bindu. Mary is to the right of Rani. Reeta is between Rani and Mary. Who is sitting immediate right to Reeta ?

a. Bindu b. Rani
c. Mary d. Seema

MTP June 22

) Six students are sitting in row in an examination hall. K is sitting between V and R. V is sitting next to M. M is sitting next to B. B is sitting extreme left and Q is sitting next to R . Who is sitting adjacent to V?

a. M and R b. M and K
c. K and R d. M and Q

MTP June 22

1) There are 3 females A, B and E and 4 males C, D, F, and G standing in a straight line. No two females are together. B is to right of C, F and D are not together as A is placed between them. G is not near B or E but E and F are together. D is not to the right of B.

Who are in the extreme ends?

a. G and B b. C and F
c. B and D d. None of these

MTP June 22

2) There are 3 females A, B and E and 4 males C, D, F, and G standing in a straight line. No two females are together. B is to right of C, F and D are not together as A is placed between them. G is not near B or E but E and F are together. D is not to the right of B. Who is exactly in the middle?

a. A b. F
c. E d. None of these

MTP June 22

33) Seven persons A, B, C, D, E, F and G are sitting in a straight line (not necessarily in the same order) facing North

1. Only two persons sit between F and G and G sits second to the left of B.
2. D sits third to the left of C
3. E sits exactly between G and B and B sits at the extreme right end of the row.

Who amongst the following sits at the extreme left on the line?

a. F b. D
c. C d. E

MTP June 22

(34) Seven persons A, B, C, D, E, F and G are sitting in a straight line (not necessarily in the same order) facing North

1. Only two persons sit between F and G and G sits second to the left of B.
2. D sits third to the left of C
3. E sits exactly between G and B and B sits at the extreme right end of the row.

Who amongst the following sits exactly middle of the line?

a. A b. C
c. E d. G

MTP Dec 22 – Series I

(35) Six friends A, B, C, D, E, and F are sitting in a row facing north. C is sitting between A and E. D is not at the end. B is sitting at the immediate right of E. F is not at the right end but D is sitting at 3rd left of E.

How many persons are there to the right of D?

a. One b. Two
c. Three d. Four

MTP Dec 22 – Series I

(36) Six friends A, B, C, D, E, and F are sitting in a row facing north. C is sitting between A and E. D is not at the end. B is sitting at the immediate right of E. F is not at the right end but D is sitting at 3rd left of E.

Which of the following is sitting to the left of D?

a. F b. C
c. E d. A

MTP Dec 22 – Series I

(37) Six friends A, B, C, D, E, and F are sitting in a row facing north. C is sitting between A and E. D is not at the end. B is sitting at the immediate right of E. F is not at the right end but D is sitting at 3rd left of E.

Who is at the immediate left of C?

a. A b. E
c. Either E or A d. Not determine

MTP Dec 22 – Series I

(38) Five persons are sitting on a bench to be photographed, S is to the left of N and to the right of B. M is to the right of N. R is between N and M. Who is sitting immediately right of R.

a. B b. N
c. M d. S

MTP Dec 22 Series II

(39) ☆ A, P, R, X, S and Z are sitting in a row. S and Z are in the center. A and P are at the ends. R is sitting to the left of A. Who is to the right of P?

a. A b. X
c. S d. Z

MTP Dec 22 Series II

(40) A, B, C, D and E are sitting on a bench. A is sitting next to B, C is sitting next to D, D is not sitting with E who is on the left end of the bench. C is on the second position from the right. A is to the right of B and E. A and C are sitting together. In which position A is sitting?

a. Between B and D
b. Between B and C
c. Between E and D
d. Between C and E

MTP Dec 22 Series II

(41) There are four children P, Q, R, S sitting in a row. P occupies seat next to Q but not next to R. If R is not sitting next to S? Who is occupying seat next to adjacent to S.

a. Q b. P
c. P and Q d. None of these

MTP Dec 22 Series II

(42) Five persons are standing in a line. One of the two persons at the extreme ends is a professor and the other a businessman. An advocate is standing to the right of a student. An author is to the left of the businessman. The student is standing between the professor and the advocate. Counting from the left, the advocate is at which place?

a. 1^{st} b. 2^{nd}
c. 3^{rd} d. 5^{th}

MTP June 2023 Series I

(43) Five students are standing in a circle. Abhinav is between Alok and Ankur. Apurva is on the left of Abhishek. Alok is on the left of Apurva. Who is sitting next to Abhinav on his right?

a. Apurva b. Ankur
c. Abhishek d. Alok

MTP June 2023 Series I

(44) P, Q, R, S and T are seated in a line facing west. R is sitting at north end and S is sitting at south end. T is neighbour of R and Q. P and Q are seated together, then who is sitting the middle?

a. P b. Q
c. R d. S

MTP June 2023 Series I

(45) Suresh's sister is the wife of Ram, Ram is Rani's brother. Ram's father is Madhur, Sheetal is Ram's grandmother, Rema is sheetal's daughter-in-law. Rohit is Rani's brother's son. Who is Rohit to Suresh?

a. Brother-in-law b. Son
c. Brother d. Nephew

MTP June 2023 Series I

(46) Six friends A, B, C, D, E and F are sitting in a row facing East. C is between A and E. B is just to the right of E but left of D. F is not at the right end. Who is at the right end?

a. D b. B
c. E d. C

MTP June 2023 Series II

(47) Six friends A, B, C, D, E and F are sitting in a row facing towards North. C is sitting between A and E. D is not at the end. B is sitting at immediate right of E. F is not at the right end but D is sitting at 3^{rd} left of E.
How many persons are there to the right of D?

a. One b. Two
c. Three d. Four

MTP June 2023 Series II

(48) Six friends A, B, C, D, E and F are sitting in a row facing towards North. C is sitting between A and E. D is not at the end. B is sitting at immediate right of E. F is not at the right end but D is sitting at 3^{rd} left of E.
Which of the following is sitting to the left of D?

a. F b. C
c. E d. A

Answer Key

1	a	2	b	3	a
4	a	5	a	6	b
7	b	8	c	9	a
10	a	11	c	12	c
13	a	14	d	15	d
16	a	17	c	18	c
19	b	20	b	21	c
22	b	23	d	24	b
25	d	26	b	27	b
28	c	29	c	30	b
31	a	32	b	33	b
34	b	35	d	36	a
37	a	38	c	39	b
40	b	41	b	42	c
43	d	44	b	45	d
46	a	47	d	48	a

Linear Arrangements in two rows

Past Year Questions

PYQ Nov. 18

(1) Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U. Q gets a North facing flat and it is not next to S. S and U get diagonally opposite flat. R next to U gets a South facing flat and T gets a North facing flat. Whose flat is between Q and S?

a. T b. U
c. R d. P

PYQ July 21

(2) Six friends P, Q, R, S, T and U are sitting around the hexagonal table each at one corner and are facing the center of the hexagonal. P is second to the left of U. Q is neighbor of R and S. T is second to the left of S. Which one is sitting opposite to S?

a. R b. P
c. Q d. S

PYQ June 22

(3) If six person are sitting in a hexagonal table are P, Q, R, S, T, U each facing the center. P is seated to opposite to Q who is b/w R & S. P is b/w T and U. T is the left of S. Which of them is facing R?

a. P b. Q
c. U d. T

PYQ Dec 22

(4) Six persons A, B, C, D, E and F are sitting in two rows with three persons in each row. Both rows are in front of each other. E is not at the end of the any row and D is second left to the F, C is neighbor of E and diagonally opposite to D. If B is neighbor of F who is in front of C then who is sitting diagonally to F?

a. C b. E
c. A d. D

Answer Key

1	a	2	b	3	d
4	c				

Linear Arrangements in two rows

Mock Test Paper Questions

MTP May 19

(1) Eight persons P to W are sitting in front of one another in two rows. Each row has four persons. P is between U and V and facing North. Q, who is to the immediate left of M is facing W. R is between T and M and W is to the immediate right of V. Who is sitting in front of R?

a. U b. Q
c. V d. P

MTP May 19

(2) Who is to the immediate right of R?

a. M b. U
c. M OR P d. T

MTP May 19

(3) In which of the following pairs, persons are sitting in front of each other?

a. MV b. RV
c. TV d. UR

MTP May 19 Series II

(4) Eight person's P to W are sitting in front of one another in two rows. Each row has four persons. P is between U and V and facing North. Q, who is to the immediate left of M is facing W. R is between T and M and W is to the immediate right of V.
Who is sitting in front of R?

a. U b. Q
c. V d. P

MTP May 19 Series II

(5) Eight person's P to W are sitting in front of one another in two rows. Each row has four persons. P is between U and V and facing North. Q, who is to the immediate left of M is facing W. R is between T and M and W is to the immediate right of V.
Who is to the immediate right of R?
a. M b. U
c. M or T d. None of these

MTP May 19 Series II

(6) Eight person's P to W are sitting in front of one another in two rows. Each row has four persons. P is between U and V and facing North. Q, who is to the immediate left of M is facing W. R is between T and M and W is to the immediate right of V.
In which of the following pairs, persons are sitting in front of each other?
a. MV b. RV
c. TV d. UR

MTP Apr 21

(7) Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U. If Q gets a North facing flat and is not next to S. S and U get diagonally opposite flat. R is next to U gets a south facing flat and T gets North facing flat. Whose falt is between Q and S?
a. T b. U
c. R d. P

MTP Apr 21

(8) 8 Persons A, B, C, D, E, F, G and H are sitting in two rows opposite to each other. Each row has four persons. B and C are sitting in front of each other. C is between D and E. H is sitting immediate left of E. H and F are diagonally opposite. G and B are not near to each other.
Who is in front of A?
a. E b. D
c. C d. B

MTP June 2023 Series I

(9) Six persons A, B, C, D, E and F are sitting in two rows with three persons in each row. Both rows are in front of each other. E is not at the end of the any row and D is second left to the F, C is neighbour of E and diagonaly opposite to D. If B is neighbour F who is in front of C then who is sitting diagonally to F?
a. C b. E
c. A d. D

Answer Key

1 d	2 d	3 a
4 d	5 d	6 a
7 a	8 a	9 c

Circular Arrangements

Past Year Questions

PYQ Nov. 20

(1) Eight friends I, J, K, L, M, N O and P are sitting in a circle facing the entre. J is sitting between O and L; P is third to the left of J and second to the right of I; K is sitting between I and O; J and M are not sitting opposite to each other. Which of the following statements is not correct?
a. K is sitting third to the right of L
b. I is sitting between K and N
c. L and I are sitting opposite to each other
d. M is sitting between N and L

PYQ Jan. 21

(2) A, B, C and D are playing cards. A and B are partners. D faces towards North. If A faces West, then who faces south?
a. C
b. B
c. D
d. Data is inadequate

PYQ Dec. 21

(3) Four ladies A, B, C and D four Gentlemen E, F, G and H are siting in a circle around a table facing each other.
1. No two ladies or gentlemen are sitting side by side.
2. C, who is sitting between G and E, is facing D.
3. F is between D and A facing G.
4. H is to the right of B.
Who is immediate neighbour of B?
a. G and H b. E and F
c. E and G d. A and B

Answer Key

1 d	2 a	3 a

Circular Arrangements

Mock Test Paper Questions

MTP May 18

(1) Six girls are standing in such a way that they form a circle, facing the centre. Subbu is to the left of Pappu, Revathi is between Subbu and Nisha, Aruna is between Pappu and Keerthna. Who is to the right of Nisha?

a. Ravathi b. Aruna
c. Subbu d. Keertha

MTP Nov 18

(2) 1. Six friends A, B, C, D, E and F are sitting in a closed circle facing the center.
2. E is to the left of D.
3. C is between A and B.
4. F is between E and A
Who is to the left of B?

a. A b. C
c. D d. E

MTP Nov 18

(3) 1. Six friends A, B, C, D, E and F are sitting in a closed circle facing the center.
2. E is to the left of D.
3. C is between A and B.
4. F is between E and A
Who is to the right of C?

a. A b. B
c. C d. D

MTP Nov 19

(4) Four girls are A, B, C and D are sitting around a circle facing the center. B and C are in front of each other, which of the following is definitely true?

a. A and D are in front of each other
b. A is not between B and C
c. D is to the left of C
d. A is to the left of C

MTP Nov 20

(5) Five people A, B, C, D and E are seated about a round table. Every chair is spaced equidistant from adjacent chairs.
I. C is seated next to A
II. A is seated two seats from D.
III. B is not seated next to A.

Which of the following must be true?
(I) D is seated next to B.
(II) E is seated next to A.
Select the correct answer from the codes given below:

a. Only I
b. Only II
c. Both I and II
d. Neither I nor II

MTP Nov 20

(6) Directions to solve
(a) P, Q, R, S, T, U, V and W are sitting round the circle and are facing the Centre ☆
(b) P is second to the right of T who is the neighbor of R and V.
(c) S is not neighbour of P
(d) V is neighbour of U
(e) Q is not between S and W, W is not between U and S
Who is two of the following are not neighbor

a. RV
b. UV
c. RP
d. QW

MTP March 21

(7) Eight friends A, B, C, D, E, F, G and H are sitting in circle facing the center . B is sitting G and D. H is third to the left of B and second to the right of A. C is sitting between A and G and B and E are not sitting opposite to each other ? ☆

Who is third to left of D ?

a. F
b. E
c. A
d. Cannot be determined

MTP March 21

(8) Eight friends A, B, C, D, E, F, G and H are sitting in circle facing the center . B is sitting G and D. H is third to the left of B and second to the right of A. C is sitting between A and G and B and E are not sitting opposite to each other ?

Who is sitting between H and D ?

a. F
b. E
c. A
d. Cannot be determined

MTP Apr 21

(9) Directions to solve:
(a) P, Q, R, S, T, U, V and W are sitting round the circle and are facing the Centre
(b) P is second to the right of T who is the neighbor of R and V.
(c) S is not neighbour of P
(d) V is neighbour of U
(e) Q is not between S and W, W is not between U and S
Who is two of the following are not neighbor
a. RV
b. UV
c. RP
d. QW

MTP Nov 21

(10) (a) P, Q, R, S, T, U, V and W are sitting round the circle and facing the center.
(b) P is second to the right of T who is neighbour of R and V.
(c) S is not the neighbour of U.
(d) V is neighbour of U.
(e) Q is not between S and W. W is not between U and S. Who is immediate left of V?
a. P b. U
c. R d. T

MTP Nov 21

(11) (a) P, Q, R, S, T, U, V and W are sitting round the circle and facing the center.
(b) P is second to the right of T who is neighbour of R and V.
(c) S is not the neighbour of U.
(d) V is neighbour of U.
(e) Q is not between S and W. W is not between u and S
What is the position of R?
a. Between P and T
b. Second to the right of S
c. to the immediate right of W
d. inadequate data

MTP Nov 21

(12) (a) P, Q, R, S, T, U, V and W are sitting round the circle and facing the center.
(b) P is second to the right of T who is neighbour of R and V.
(c) S is not the neighbour of U.
(d) V is neighbour of U.
(e) Q is not between S and W. W is not between u and S
Which are not following are not neighbour
a. UV b. VT
c. RV d. PQ

MTP Oct 21

(13) P, T, V, R, M, D, K and W are sitting around a circle table facing the centre. V is second to the left of T. T is fourth to the right of M. D and P are not immediate neighbours of T. D is third to the right of P. W is not an immediate neighbour P. P is to the immediate left of K.
Who is Second to the left of K?
a. P b. R
c. M d. W

MTP Oct 21

(14) ☆ P, T, V, R, M, D, K and W are sitting around a circle table facing the centre. V is second to the left of T. T is fourth to the right of M. D and P are not immediate neighbours of T. D is third to the right of P. W is not an immediate neighbour P. P is to the immediate left of K.
Who is the immediate left of V?
a. D b. M
c. W d. None of these

MTP Oct 21

(15) P, T, V, R, M, D, K and W are sitting around a circle table facing the centre. V is second to the left of T. T is fourth to the right of M. D and P are not immediate neighbours of T. D is third to the right of P. W is not an immediate neighbour P. P is to the immediate left of K.
What is R's Position with respect to V?
a. Second to the right
b. Fifth to the right
c. Third to the left
d. Second to the left

MTP March 22

(16) Four ladies A, B, C and D and four gentlemen E, F, G and H are sitting in circle around a table facing each other
1. No two ladies or gentlemen are sitting side by side
2. C, who is sitting between G and E , facing D
3. F is between D and A and facing G
4. H is to the right of B
Who is immediate neighbor of B?
a. G and H b. E and F
c. A and B d. None

MTP March 22

(17) Four ladies A, B, C and D and four gentlemen E, F, G and H are sitting in circle around a table facing each other

1. No two ladies or gentlemen are sitting side by side
2. C, who is sitting between G and E , facing D
3. F is between D and A and facing G
4. H is to the right of B

Who is sitting left of A?

a. F b. E
c. C d. D

MTP Dec 22 – Series I

(18) Five students are standing in a circle. Abhinav is between Alok and Ankur. Apurva is on the left of Abhishek. Alok is on the left of Apurva. Who is sitting next to Abhinav on his right?

a. Apurva b. Ankur
c. Abhishek d. Alok

MTP Dec 22 Series II

(19) Six persons A,B,C,D,E and F are standing in a circle. B is between D and C.A is between E and C.F is to the right of D Who is between A and F?

a. B b. C
c. D d. E

MTP Jun 23 Series II

(20) Eight friends A, B, C, D, E, F, G, and H are sitting in a circle facing the Centre, B is sitting between G and D. H is third to the left of B and second to the right of A. C is sitting between A and G and B and E are not sitting opposite to each other. Who is third to the left of D?

a. F b. E
c. A d. Cannot be determined

MTP Jun 23 Series II

(21) Eight friends A, B, C, D, E, F, G, and H are sitting in a circle facing the Centre, B is sitting between G and D. H is third to the left of B and second to the right of A. C is sitting between A and G and B and E are not sitting opposite to each other. Which of the following statement is not correct?

a. D and A are sitting opposite to each other
b. C is third to the right of D
c. E is sitting F and D
d. A is sitting C and F

Answer Key

1 A	2 c	3 a
4 a	5 c	6 a
7 a	8 b	9 a
10 b	11 a	12 c
13 b	14 a	15 a
16 a	17 a	18 d
19 d	20 a	21 c

Chapter 12 – Blood Relations

Regular Questions

Past Year Questions

PYQ May 18

(1) A reads a book and find the name of the author familiar. Th author 'B' is the paternal uncle of C. C is the daughter of A. How is B related to A?

a. Brother b. Sister
c. Father d. Uncle

PYQ May 18

(2) P and Q are brothers R and S are sisters. P's son is R's brother. How is Q related to R?

a. Uncle b. Brother
c. Father d. Grandfather

PYQ Nov. 18

(3) Six persons are seen together in a group. They are A, B, C, D, E and F. B is the brother of D, but D is not brother of B. F is the brother of B, C and A are married together. F is son of C, but C is not the mother of F. E is the brother of A. The number of female members in the group is:

a. 1 b. 2
c. 3 d. 4

PYQ Nov. 18

(4) ☆ Ram and Mohan are brothers, Shankar is Mohan's father. Chhaya is Shankar's sister. Priya is Shankar's niece. Shubhra is chhaya's granddaughter. How is Ram related to Shubhra?

a. Brother b. Uncle
c. Cousin d. Nephew

PYQ Nov. 19

(5) A, B, C, D, E and F are members of a family. B is the son of A but A is not the mother of B, A and C are married couple. F is the brother of A. D is the sister of B, E is the son of C. How many male members are there in the family.

a. 1 b. 2
c. 3 d. 4

PYQ Nov. 19

(6) A, B, C, D, E and F are members of a family. B is the son of A but A is not the mother of B, A and C are married couple. F is the brother of A. D is the sister of B, E is the son of C. How is F related to B?

a. Uncle b. Daughter
c. Son d. Niece

PYQ Nov. 19

(7) A, B, C, D, E and F are members of a family. B is the son of A but A is not the mother of B, A and C are married couple. F is the brother of A. D is the sister of B, E is the son of C. How many children does A have?

a. 3 b. 2
c. 4 d. 1

PYQ Nov. 20

(8) Vicky introduces John as the son of the only brother of his father's wife. How is Vicky related to John?

a. Son b. Cousin
c. Uncle d. Brother

PYQ Jan. 21

(9) ☆ P is the brother of Q and R, S is the mother of R. T is the father of P, which of the following statement cannot be definitely true?

a. S is the mother of P
b. P is son of S
c. T is husband of S
d. Q is son of T

PYQ July 21

(10) A is C's son, C and Q are sisters, Z is the mother of Q and P is the son of Z. Which of the following statement is true?

a. A and P are cousins
b. C and P are sisters
c. P is the maternal uncle of A
d. A is the maternal uncle of P

PYQ Dec. 21

(11) D is daughter of E. A is son of D. C is a brother of A and B is the sister of A. F is the brother of D. How F is related to B?

a. Father-in-law b. Uncle
c. Brother d. Mother-in-law

PYQ Dec. 21

(12) It is given that "A is the mother of B; B is the sister of C; C is the father of D". How is A related to D?

a. Mother b. Grandmother
c. Aunt d. Sister

PYQ Dec. 21

(13) P, Q, R, S, T, U are 6 members of a family in which there are two married couples. T, a teacher is married to a doctor who is mother of R and U. Q the lawyer is married to P. P has one son and one grandson. Of the two married ladies one is a housewife. There is also one student and one male engineer in the family. Which of the following is true about the granddaughter of the family?

a. She is a lawyer
b. She is an engineer
c. She is a student
d. She is a doctor

PYQ Dec. 21

(14) X and Y are brothers. R is the father of Y. S is the brother of T and maternal uncle of X. What is T to R?

a. Mother b. Wife
c. Sister d. Brother

PYQ June 22

(15) Ravi is son of Aman's father's sister. Ram is son of Divya, who is the mother of Gaurav and grandmother of Aman. Ashok is father of Tanya and grandfather of Ravi. Divya is wife of Ashok. How is Ravi related to Divya?

a. Nephew b. Grandson
c. Son d. None of these

PYQ June 22

(16) A women going with a boy is asked by another women about the relationship between them. The women replied, "My maternal uncle and the uncle are his maternal uncle are same", the relationship between the lady and the boy is___

a. Maternal grandmother and grandson
b. Mother and son
c. Father and son
d. Paternal grandmother and grandson

PYQ June 22

(17) A is B's sister. C is B's mother. D is C's father. E is D's mother. Then how A is related to D?

a. Grandfather b. Grandmother
c. Daughter d. Granddaughter

PYQ Dec 22

(18) Suresh's sister is the wife of Ram. Ram is Rani's brother. Ram's father is Madhur. Sheetal is Ram's grandmother. Rema is Sheetal's daughter-in-law. Rohit is Rani's brother's son. Who is Rohit to Suresh?

a. Brother-in-law b. Son
c. Brother d. Nephew

PYQ Dec 22

(19) There are six children playing football namely A, B, C, D, E and F. A & E are brothers. F is sister of E. C is the only son of A's uncle. B & D are daughters of the brother of C's father. How D is related to A?

a. Uncle b. Cousin
c. Niece d. Sister

PYQ Dec 22

(20) In a joint family, there are father, mother, 3 married sons and one unmarried daughter. Out of the sons, two have 2 daughters each and one has a son only. How many female members are there in the family?

a. 3 b. 6
c. 9 d. 5

PYQ Dec 22

(21) Annanya is mother of Satya and Shyam is the son of Bhima. Shiva is brother of Annanya. If Satya is sister of Shyam. How Bhima is related to Shiva?

a. Son b. Cousin
c. Brother-in-law d. Son-in-law

PYQ Dec 22

(22) Suman is daughter-in-law of Rakesh and sister-in-law of Rajesh. Ramesh is the son of Rakesh and only brother of Rajesh. Find the relation of Suman with Ramesh?

a. Sister-in-law b. Cousin
c. Aunt d. Wife

PYQ Jun 23

(23) P, Q, R, S, T and U are 6 members of a family in which there are two married couples. T, a teacher is married to a doctor, who is mother of R and U. Q, the lawyer is married to P. P has one son and one grandson. Of the two married ladies one is a housewife. There is also one student and one male engineer in the family. Which of the following is true about the grandson of the family?

a. He is a lawyer
b. He is an engineer
c. He is a student
d. He is a doctor

PYQ Jun 23

(24) Suman is daughter-in-law of Rakesh and sister-in-law of Rajesh. Ramesh is the son of Rakesh and only brother of Rajesh. Find the relation of Suman with Ramesh?

a. Sister-in-law b. Cousin
c. Aunt d. Wife

PYQ Jun 23

(25) Neelam, who is Deepak's daughter, says to Deepika "your mother-in-law Rekha is younger daughter of Ramlal, who is my grandfather." How is Neelam related to Deepika?

a. Sister b. Niece
c. Sister-in-law d. Aunt

PYQ Jun 23

(26) If A is the brother of B, B is the daughter of C and D is the father of A, then how is C related to D?

a. Husband b. Wife
c. Granddaughter d. Grandfather

PYQ Jun 23

(27) X is the husband of Y. W is daughter of X. Z is husband of W. N is daughter of Z. What is the relationship of Y to N?

a. Cousin b. Niece
c. Daughter d. Grand-Mother

PYQ Jun 23

(28) Based on the statements given below, find out who is the uncle of P?
(i) K and J are brothers, (ii)K's sister is M,
(iii)P and N are siblings
N is the daughter of J

a. K b. J
c. N d. M

PYQ Jun 23

(29) There are six persons A, B, C, D, E and F in a family. A and B are a married couple and A is a male member. D is the only son of C, who is the brother of A. E is the sister of D. B is the daughter-in-law of F whose husband has died. Who is the mother of C?

a. A b. E
c. D d. F

Answer Key

1 a	2 a	3 b
4 b	5 d	6 a
7 a	8 b	9 d
10 c	11 b	12 b
13 c	14 b	15 b
16 b	17 d	18 d
19 d	20 c	21 c
22 d	23 b	24 d
25 c	26 b	27 d
28 a	29 d	

Regular Questions

Mock Test Paper Questions

MTP May 18

(1) A is B's brother. C is D'S father. E is B's mother. A and D are brothers. How is E related to C?

a. Sister
b. Sister-in-law
c. Niece
d. Wife

MTP May 18

(2) A is B's brother, C is A's mother, D is C's father, E is B's son, How is B related to D?

a. Son
b. Granddaughter
c. Grandfather
d. Great Grandfather

MTP May 18

(3) A is the mother of D and sister of B. B has a daughter C who is married to F. G is the husband of A. How is G related to D?

a. Uncle
b. Husband
c. Son
d. Father

MTP May 18

(4) P and Q are brothers. R and S are sister. P's son is S's brother. How is Q related to R?
a. Uncle
b. Brother
c. Father
d. Grandfather

MTP Nov 18

(5) A is the sister of B. B is the brother of C. C is the son of D. How is D related to A?
a. Mother b. Daughter
c. Son d. uncle

MTP Nov 18

(6) If P is the husband of Q and R is the mother of S and Q. What is R to P?
a. Mother b. Sister
c. Aunt d. Mother-in-law

MTP Nov 18

(7) P is the father of T. T is the daughter of M. M is the daughter of K. What is P to K?
a. Father b. Father-in-law
c. Brother d. Son-in-law

MTP Nov 18

(8) A and B are brothers. E is the daughter of F. F is the wife of B. What is the relation of E to A?
a. Sister b. Daughter
c. Niece d. Daughter

MTP May 19

(9) C is mother of A and B. If D is the husband of B, then what is C to D
a. Mother b. Aunt
c. Mother-in-law d. Sister

MTP May 19

(10) A is B's sister, C is B's mother, D is C's father, E is D's mother, then how is A related D?
a. Granddaughter b. Daughter
c. Aunt d. Father

MTP May 18

(11) A, Q, Y and Z are different persons. Z is the father of Q. A is the daughter of Y and Y is the son of Z. If P is the son of Y and B is the brother of P, then
a. B and Y are brothers
b. A is sister of B
c. Z is the uncle of B
d. Q and Y are brothers

MTP May 19

(12) A is father of C and D is son of B. E is brother of A. If C is sister of D how is B related to E?
a. Sister-in-Law b. Sister
c. Brother d. Brother-in-Law

MTP May 19 Series II

(13) X is the husband of Y. W is the daughter of X. Z is husband of W. N is the daughter of Z. What is the relationship of N to Y?
a. Cousin b. Niece
c. Daughter d. Grand-Daughter

MTP May 19 Series II

(14) 'A' reads a book and find the name of the author familiar. The author 'B' is the paternal uncle of 'C'. 'C' is the daughter of 'A'. How is 'B' related to 'A'?
a. Brother b. Sister
c. Father d. Uncle

MTP May 19 Series II

(15) 'A' s mother is sister of B and she has a daughter C who is 21 years old. How is B related to A?
a. Uncle b. Maternal Uncle
c. Niece d. Daughter

MTP Nov 19

(16) C is mother of A and B. If D is husband of B, then what is C to D ?
a. Mother b. Aunt
c. Mother-in-law d. Sister

MTP Nov 19

(17) Moni is daughter of Sheela. Sheela is wife of my wife's brother. How Moni is related to my wife?
a. Cousin b. Niece
c. Sister d. Sister-in-law

MTP May 20

(18) A family has a man, his wife, their four sons and their wives. The family of every son also 3 sons and one daughter. Find out the total number of male members in the whole family?
a. 4 b. 8
c. 12 d. 17

MTP May 20

(19) Given that
1. A is mother of B.
2. C is son of A.
3. D is brother of E.
4. E is daughter of B.

The grandmother of D is
a. A b. B

c. C d. E

MTP Nov 20

(20) If D is brother of B and B is related C. To answer this question which of the following statements are necessary?
I. The son of D is the grandson of C.
II. B is the sister of D.
a. Only I b. Only II
c. Either I or II d. I and II

MTP Nov 20

(21) There are two couple in a family. K has two children. M is wife of O, who is the brother of B. F is daughter K. U is sister of S, who is son of O. T is the son of B, who is the male. How U is related to T?
a. Mother b. Brother
c. Sister d. Cousin

MTP March 21

(22) Anil said "This girl is the wife of the grandson of my mother". How is Anil related to the girl?
a. Brother b. Grandfather
c. Husband d. Father-in-law

MTP March 21

(23) P is the mother of K, K is the sister of D. D is the father of J. How is P related to j?
a. Mother
b. Grandmother
c. Aunt
d. Data is inadequate

MTP March 21

(24) In a family, there are six members A, B, C, D, E and F. A and B are a married couple, A being the male member. D is the only son of C, who is the brother of A. E is the sister of D. B is the daughter-in-law of F, whose husband has died. How is E related to C?
a. Sister b. Daughter
c. Cousin d. Mother

MTP Apr 21

(25) If D is brother of B and B is related C. To answer this question which of the following statements are necessary?
I. The son of D is the grandson of C.
II. B is the sister of D.
a. Only I b. Only II
c. Either I or II d. I and II

MTP Apr 21

(26) A, B, C, D, E and F are members of the family. B is the son A but A is not mother B, A and C are married couple. F is brother of A. D is the sister of B. E is son of C. How many male members are in the family?
a. 1 b. 2
c. 3 d. 4

MTP Nov 21

(27) Read the following information carefully and answer the questions given below ? There are six children playing football, namely P, Q, R, S, T and U. P and T are brothers, U is sister of T, R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father
How many female players are there?
a. One b. Two
c. Three d. Four

MTP Nov 21

(28) Read the following information carefully and answer the questions given below ? There are six children playing football, namely P, Q, R, S, T and U. P and T are bothers, U is sister of T, R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father
How is S is related to P?
a. Uncle b. Sister
c. Niece d. Cousin

MTP Oct 21

(29) A is the son of C; C and Q are the sisters; Z is the mother of Q and P is the son of Z. Which of the following statements is true?
a. A and P are cousins
b. C and P are sisters
c. P is the maternal uncle of A
d. A is the maternal uncle of P

MTP Oct 21

(30) There are six children playing football, namely P, Q, R, S, T and U. P and T are bothers, U is sister of T, R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father
How many female players are there?
a. One b. Two
c. Three d. Four

MTP Oct 21

(31) There are six children playing football, namely P, Q, R, S, T and U. P and T are bothers, U is sister of T, R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father
How is S is related to P?
a. Uncle b. Sister
c. Niece d. Cousin

MTP March 22

(32) D is daughter of E . A is son of D . C is brother of A and B is sister of A . F is brother of D . How F is related to B ?
a. Father-in -Law b. Uncle
c. Brother d. Mother-in-law

MTP March 22

(33) It is given that "A is the mother of B; B is the sister of C; C is the father of D". How is A related to D?
a. Mother b. Grandmother
c. Aunt d. Sister

MTP March 22

(34) Sanjay has three daughters, and each daughter has a brother. How many male members are there in the family?
a. 4 b. 2
c. 3 d. 1

MTP June 22

(35) E is the son of A. D is the son of B. E is married to C. C is B's daughter. How is D related to E ?
a. Brother b. Uncle
c. Brother-in-law d. Husband

MTP June 22

(36) There are six children playing football namely A, B, C, D, E and F. A and E are brothers. F is the sister of E. C is the only son of A's uncle. B and D are the daughters of the brother of C's father. How is C related to F ?
a. Cousin b. Brother
c. Son d. Uncle

MTP Dec 22 Series I

(37) B is the brother of A whose only sister is mother of C, D is the maternal grandmother of C How is A related to D?
a. Aunt
b. Daughter-in-law
c. Daughter
d. Nephew

MTP Dec 22 – Series I

(38) Anita is the niece of Pratik's mother. Anita's mother is Pratik's aunt. Rohan is Anita's ☆ mother's brother. Rohan's mother is Anita's grandmother. From this information. Deduce the relationship between Rohan's mother is _____to Anita's mother.
a. Aunt b. Mother
c. No Relation d. Sister

MTP Dec 22 – Series I

(39) Anita is the niece of Pratik's mother. Anita's mother is Pratik's aunt. Rohan is Anita's mother's brother. Rohan's mother is Anita's grandmother. From this information. Deduce the relationship between
Prateek's and Anita's mother are _____
a. Cousin Sister b. Sister-in-law
c. Friends d. Sisters

MTP Dec 22 – Series I

(40) Anita is the niece of Pratik's mother. Anita's mother is Pratik's aunt. Rohan is Anita's mother's brother. Rohan's mother is Anita's grandmother. From this information. Deduce the relationship between
Rohan is Prateek's _____
a. Brother b. Brother-In-law
c. Uncle d. Cousin Brother

MTP Dec 22 Series II

(41) P is Q's daughter, Q is R's mother, S is R's brother. How is S related to P?
a. Father b. Grandfather
c. Brother d. Son

MTP Dec 22 Series II

(42) If X is brother of son of Y's son, then how is X related to Y?
a. Brother b. Cousin
c. Grandson d. Son

MTP Dec 22 Series II

(43) If P is the husband of Q and R is the mother of S and Q. What is R to P?
a. Mother b. Sister
c. Aunt d. Mother-in-law

MTP Dec 22 Series I

(44) B is the brother of A. Whose only sister is mother of C. D is maternal grandmother of C. How is A related to D?
a. Aunt
b. Daughter-in-law
c. Daughter

d. Nephew

MTP Dec 22 Series II

(45) X and Y are the children of A. A is the father of X but Y is not his son. How is Y related to A?

a. Son b. Daughter
c. Sister d. Brother

MTP June 2023 Series I

(46) In a joint family, there are father, mother, 3 married sons and one unmarried daughter. Out of the sons, two have 2 daughters each and one has a son only. How many female members are there in the family?

a. 3 b. 6
c. 9 d. 8

MTP June 2023 Series I

(47) When Rani saw Vinit, she recollected that "He is the brother of my grandfather's son". How is Rani related to Vinit?

a. Aunt b. Daughter
c. Sister d. Niece

MTP June 2023 Series I

(48) Annanya is mother of Satya and Shyam is the son of Bhima, Shiva is brother of Annanya. If Satya is sister of Shyam, How Bhima is related to Shiva?

a. Son b. Cousin
c. Brother-in-law d. Son-in-law

MTP June 2023 Series I

(49) Suman is daughter-in-law of Rakesh and sister-in-law of Rajesh, Ramesh is the son of Rakesh and only brother of Rajesh. Find the relation of Suman with Ramesh.

a. Sister-in-law b. Cousin
c. Aunt d. Wife

MTP June 2023 Series II

(50) The brother of X's mother is the only son of Y's mother's father. How is Y's mother related to X.

a. Mother b. Daughter
c. Grandmother d. Cannot be determined

MTP June 2023 Series II

(51) A man said to a woman, - your mother's husband's sister is my aunt. How is the woman related to the man?

a. Granddaughter b. Daughter
c. Sister d. Aunt

Answer Key

1	d	2	b	3	d
4	a	5	a	6	d
7	d	8	c	9	c
10	a	11	b	12	a
13	d	14	a	15	b
16	c	17	b	18	d
19	a	20	d	21	d
22	d	23	b	24	b
25	d	26	d	27	c
28	b	29	c	30	c
31	b	32	b	33	b
34	b	35	c	36	a
37	c	38	b	39	d
40	c	41	c	42	c
43	d	44	c	45	b
46	c	47	d	48	c
49	d	50	a	51	c

☆ Pointing Based Questions

Past Exam Questions

PYQ May 18

(1) Vinod introduce Vishal as the son of the only brother of his father's wife. How is Vinod related to Vishal?

a. Cousin b. Brother
c. Son d. Uncle

PYQ May 18

(2) ☆ Suresh introduces a man as "he is the son of the women who is the mother of the husband on my mother". How is Suresh is related to the man?

a. Brother-in-law b. Son
c. Brother d. Nephew

PYQ May 18

(3) A prisoner introduced a boy who came to visit him to the jailor as "Brothers and sisters I have none, he is my father's son's son". Who is the boy?

a. Nephew b. Son
c. Cousin d. Uncle

PYQ Nov. 18

(4) ☆ Pointing to a man in a photograph, a women said, "the father of his brother is the only son of my grandfather", how is the women related to the man in the photograph?

a. Mother b. Aunty
c. Daughter d. Sister

PYQ June 19

(5) Pointing to a woman in a picture, sumit said, she is the mother of my son's wife's daughter. How is lady related to the sumit?
a. Uncle b. Cousin
c. Daughter d. None of these

PYQ June 19

(6) Pointing to a man in a photograph, a man said, "His mother's husband's sister is my aunt". ☆ Then what is the relation between that man and him?
a. Son b. Uncle
c. Nephew d. Brother

PYQ June 19

(7) Pointing the old man Kailash said "his son is my son's uncle". How is Kailash is related to old men.
a. Brother
b. Either son or son in law
c. Son
d. Grandfather

PYQ June 19

(8) Pointing in a photograph, Sonia said, "His mother's only daughter is my mother". How is Sonia relates to that man?
a. Nephew b. Sister
c. Wife d. Niece

PYQ Nov. 20

(9) Point out a Lady Sohil said she is the daughter of woman, who is the mother of the husband of my mother. Who is the lady to Sohil?
a. Sister b. Aunt
c. Daughter d. Sister-in-law

PYQ Nov. 20

(10) Pointing towards a person, A man said to woman, "His mother is the only daughter of your father". How is the woman related to that person?
a. Mother b. Daughter
c. Sister d. Wife

PYQ Nov. 20

(11) A man said to a lady "your mother's husband's sister is my aunt. "How is the man related to the lady?
a. Father b. Grandfather
c. Son d. Brother

PYQ Nov. 20

(12) Pointing to a lady, A said, "that women is my nephew's maternal grandmother". How is that ☆ women related to A's sister who has no sister?
a. Cousin b. Son-in-law
c. Mother d. Mother-in-law

PYQ Nov. 20

(13) Pointing out to a lady, Sahil said, "she is the daughter of the woman who is the mother of the husband of my mother". Who is the lady to Sahil?
a. Aunt b. Sister
c. Daughter d. Sister-in-law

PYQ Jan. 21

(14) Pointing to a lady in a photograph, Ram said "Her son's father is the son in law of my mother". How is Ram related to the lady?
a. Aunt b. Cousin
c. Sister d. Mother

PYQ Jan. 21

(15) A girl introduced, a boy as the son of the daughter of father of her uncle. The boy is girl's
a. Son b. Brother
c. Son-in-law d. Uncle

PYQ Jan. 21

(16) Pointing to a lady, Sahil said, "She is the daughter of the woman who is the mother of the husband of my mother". Who is the lady to Sahil?
a. Aunt b. Sister
c. Daughter d. Sister-in-law

PYQ July 21

(17) Shyam's mother said to Shyam "My mother has a son whose son is Ram". Shyam is related to Ram as.
a. Uncle b. Cousin
c. Nephew d. Grandfather

PYQ July 21

(18) Amit said "The girl is the wife of the grandson of my mother". How Amit related to the girl?
a. Father-in-law b. Grandson
c. Father d. Son

PYQ July. 21

(19) Pointing towards "A", "B" said : your mother is the younger sister of my mother". "A is related to "B" as.
a. Uncle b. Cousin
c. Nephew d. Father

PYQ Dec. 21

(20) Introducing a boy and a girl said, "He is the son of the daughter of the father of my uncle". Who is the boy to the girl?

a. Brother b. Nephew
c. Uncle d. Son-in-law

PYQ Dec. 21

(21) ☆ R told to M as, "the girl, I met at the beach, was the youngest daughter of the brother-in-law of my friend's mother". How is the girl related to R's friend?

a. Cousin b. Daughter
c. Niece d. Aunt

PYQ June 22

(22) If Kamal says, "Ravi's mother is the only daughter of my mother. How is Kamal related to Ravi?

a. Father b. Grandfather
c. Son d. Maternal uncle

PYQ Dec 22

(23) When Rani saw Vinit, she recollected that " He is the brother of my grandfather's son". How is Rani related to Vinit?

a. Aunt b. Daughter
c. Sister d. Niece

PYQ Dec 22

(24) Pointing to a man in the photograph. Khushi says, "This man's son's sister is my mother-in-law". How is the Khushi's husband related to the man in the photograph?

a. Grandson b. Son
c. Son-in-law d. Cousin

PYQ Jun 23

(25) Pointing to a photograph, a woman says "This man's son's sister is my mother-in-law". How is the woman's husband related to the man in the photograph?

a. Son b. Son-in-law
c. Grandson d. Nephew

Answer Key

1 a	2 b	3 b
4 d	5 d	6 d
7 c	8 d	9 b
10 a	11 d	12 c
13 a	14 b	15 b
16 a	17 b	18 a
19 b	20 a	21 a
22 d	23 d	24 a

25 c

Pointing Based Questions

Mock Test Paper Questions

MTP Nov 19

(1) Pointing a man to photo graph, a man is said to a woman, "His mother is the only daughter of your father". How is the woman is related to the man in the photograph?

a. Sister b. Mother
c. Wife d. Daughter

MTP May 20

(2) Pointing to a lady, a man said, "The son of her only brother is the brother of my wife ". How is lady is related to man?

a. Mother's sister
b. Grandmother
c. Sister of father-in-law
d. Maternal Aunt

MTP May 20

(3) Pointing to a photograph of a boy, Ravi said, "He is son of the only son of my mother". How is Ravi related to that boy ?

a. Brother b. Uncle
c. Cousin d. Father

MTP Apr 21

(4) Pointing to a photograph of a boy Ravi said, "He is son of the only son of my mother ". How is Ravi related to that boy?

a. Brother b. Uncle
c. Cousin d. Father

MTP Nov 21

(5) Pointing to a photograph Lalita says, "He is the son of the only son of my grandfather." How is the man in the photograph related to Lalita?

a. Brother
b. Uncle
c. Cousin
d. Data is inadequate

MTP Nov 21

(6) Pointing to a photograph Lalita says, "He is the son of the only son of my grandfather." How is the man in the photograph related to Lalita?

a. Brother
b. Uncle
c. Cousin

d. Maternal Uncle

MTP Nov 21

(7) Pointing towards photograph. Vinod said "she is the daughter of my wife's mother's only daughter ". How is Vinod is related to the girl in the Photograph?

a. Cousin b. Uncle
c. Father d. None

MTP Oct 21

(8) Pointing towards photograph. Vinod said, "she is the daughter of my wife's mother's only daughter". How is Vinod is related to the girl in the Photograph?

a. Cousin b. Uncle
c. Father d. None

MTP March 22

(9) Introducing a boy a girl said, "He is the son of the daughter of the father of my uncle ". Who is the boy to the girl ?

a. Brother b. Nephew
c. Uncle d. Son-in-law

MTP March 22

(10) Rita told Mani, "The girl I met yesterday at the beach was the youngest daughter of the brother-in-law of my friend's mother." How is the girl related to Rita's friend ?

a. Cousin b. Daughter
c. Niece d. Aunt

MTP June 22

(11) Pointing towards a girl in the photograph, Pooja said. "She is the mother of Janaki whose father is my son." How is Pooja related to the girl in the photograph?

a. Mother b. Cousin
c. Aunt d. Mother-in-Law

MTP June 22

(12) Mr. Vimlesh said, "This girl is the wife of the grandson of my mother." How is the Mr. Vimlesh related to the girl?

a. Father b. Grand Father
c. Husband d. Father–in–Law

MTP June 2023 Series I

(13) Pointing to a man, a lady said " His mother is the only daughter of my mother". How is the lady related of the man?

a. Mother b. Daughter
c. Sister d. Aunt

Answer Key

1	b	2	c	3	d
4	d	5	a	6	a
7	c	8	c	9	a
10	a	11	d	12	d
13	a				

Other Special Problems

Past Exam Questions

PYQ Nov. 18

(1) If $P + Q$ means P is the mother of Q; $P \div Q$ means P is the father of Q; $P - Q$ means P is the sister of Q; then which of the following relationship shows that M is the daughter of R?

a. $R \div M + N$ b. $R + N \div M$
c. $R - M \div N$ d. None of these

PYQ June 22

(2) $P + Q$ means P is brother of Q, $P - Q$ means P is the mother of Q. $P \times Q$ means P is the sister of Q. Which of the following means M is the maternal uncle of R?

a. $M + K + R$ b. $M - R + K$
c. $M + K - R$ d. $M + K \times R$

PYQ June 22

(3) If A $ B means A is father of B. A # B means A is daughter of B. A @ B means A is sister of B. Then how is K related to M if H @ K $ L # M

a. Husband b. Uncle
c. Father d. Grandson

Answer Key

1	a	2	c	3	a

Other Special Problems

Mock Test Paper Questions

MTP Nov 19

(1) Read the following information carefully to answer the questions that follow.
I 'P + Q' means 'P is father of Q'
II. 'P - Q' means 'P is mother of Q'
III. 'P × Q' means 'P is brother of Q'
IV. 'P ÷ Q' means 'P is sister of Q'
Which of the following means 'M' is maternal uncle of T?

a. M÷K-T b. M×K-T
c. M×K+T d. M÷K+T

MTP May 20

(2) Read the following information and answer the

question
'A+B' means 'A is the daughter of B'.
'A ×B' means 'A is the son of B'.
'A – B' means 'A is the wife of B'.
If P × Q-S, which of the following is true
a. S is wife of B
b. S is father of P
c. P is daughter of Q
d. Q is father of P

MTP Nov 20

(3) If A +B means A is brother of B, A-B means A is sister of B, and A × B means A is the father of B . Which of the following means that C is the son of M?
a. M-N×C+F b. F-C+N×M
c. N+M-F×C d. M×N-C+F

MTP March 21

(4) If A+B means A is the sister of B, A x B means A is the wife of B, A % B means A is the father of B and A – B means A is the brother of B. Which of the following means T is the daughter of P?
a. P x Q % R + S – T
b. P x Q % R – T + S
c. P x Q % R + T – S
d. P x Q % R – T + S

MTP Apr 21

(5) If 'A +B means A is brother of B', A-B means A is sister of B, and A × B means A is the father of B. Which of the following means that C is the son of M?
a. M-N×C+F b. F-C+ N×M
c. N+M-F×C d. M×N-C+F

MTP Oct 21

(6) 'X @ Y' means 'X is the mother of Y;
'X $ Y' means 'X is the husband of Y;
'X # Y' means 'X is the sister of Y'.
'X * Y' means 'X is the son of Y'.
Which of the following indicates the relationship 'A is daughter of P'?
a. P @ B # F * A b. P @ B # A * F
c. A # F * B @ P d. A # F * B $ P

MTP June 22

(7) Following questions are based on the information given below.
(i) 'P×Q' means 'P is the father of Q'
(ii) 'P–Q' means 'P is the sister of Q'.
(iii) 'P+Q' means 'P is the mother of Q'
(iv) 'P÷Q' means 'P is the brother of Q'.
In the expression B+D×M÷N, how M is related to B
a. Granddaughter
b. Son
c. Grandson
d. Granddaughter or Grandson

MTP Dec 22 – Series I

(8) If X+Y means X is the mother of Y; X-Y means X is the brother of Y; X%Y means X is the father of Y and X×Y means X is the sister of Y, Which of the following shows that A is the maternal uncle of B?
a. B+D×C-A b. B-D%A
c. A-C+D×B d. A+C×D-B

MTP June 2023 Series II

(9) If A + B means, "A is the son of B"
A – B means, "A is the daughter of B"
A*B means, "A is the sister of B"
A$B means, "A is the sister of B"
If A$B-C*D is true, how is D related to B?
a. Wife b. Father
c. Grandmother d. Grandfather

MTP June 2023 Series II

(10) In a certain language, '+' means father of, '-' means daughter of, '*' means son of, and '/' means mother of. For example, X + Y – Z means that X is the father of Y and Y is the daughter of Z.sA + F – K / G + L * H. How is H related to A?
a. Sister – in – law b. Daughter-in-law
c. Daughter d. Grand – Daughter

MTP June 2023 Series II

(11) If X + Y means X is the mother of Y;
X – Y means X is the brother of Y;
X % Y means X is the father of Y and
X×Y means X is the sister of Y,
Which of the following shows that O is the maternal uncle of L?
a. L – N + M × O b. O + S × N – L
c. O – M + N × L d. L – S%O

Answer Key

1 b	2 b	3 d
4 b	5 d	6 d
7 c	8 c	9 b
10 b	11 c	

Chapter 13 – Statistical Description of Data

Basics, Collection and Presentation of Data

Past Year Questions

PYQ May 18

(1) Divided bar chart is considered for
a. Comparing different components of a variable
b. The relation of different components to the table
c. (a) or (b)
d. (a) and (b)

PYQ Nov. 18

(2) Data are said to be _____ if the investigator himself is responsible for the collection of the data.
a. Primary data
b. Secondary data
c. Mixed of primary and secondary data
d. None of these

PYQ Nov. 18

(3) A suitable graph for representing the portioning of total into sub parts in statistics is:
a. A Pie chart
b. A pictograph
c. An ogive
d. Histogram

PYQ Nov. 20

(4) The average of salaries in a factory is ₹ 47,000. The statement that the average salary ₹ 47,000 is_____.
☆
a. Descriptive Statistics
b. Inferential
c. Detailed
d. Undetailed

PYQ Nov. 20

(5) Statistics cannot deal with _____ data.
a. Quantitative
b. Qualitative
c. Textual
d. Undetailed

PYQ Nov. 20

(6) Sweetness of a sweet dish is:
a. Attribute
b. Discrete variable
c. Continuous variable
d. Variable

PYQ Nov. 20

(7) Census reports are used as a source of_____ date.
a. Secondary
b. Primary
c. Organize
d. Confidential

PYQ Nov. 20

(8) You are an auditor of a firm and the firm earns a profit of ₹ 67,000 you stated to them that the annual profit is ₹ 67,000. This is ____ type of statistics.
☆
a. Descriptive
b. Detailed
c. Non detailed
d. Inferential

PYQ Nov. 20

(9) The _____ are used usually when we wants to examine the relationship between two variables.
☆
a. Bar Graph
b. Pie Chart
c. Line Chart
d. Scatter Plot

PYQ Nov. 20

(10) When data are classified according to one criterion, then it is called _____ classification.
a. Quantitative b. Qualitative
c. Simple d. Factored

PYQ Jan. 21

(11) A bar chart is drawn for
a. Continuous data
b. Nominal data
c. Time series data
d. Comparing different components

PYQ Jan. 21

(12) A tabular presentation can be used for
a. Continuous series data
b. Nominal data
c. Time series data for longer period
d. Primary data

Note: Question not right

PYQ Jan. 21

(13) A variable with qualitative characteristic is known as
a. Quality variable
b. An attribute
c. A discrete variable
d. A continuous variable

PYQ Jan. 21

(14) The accuracy and consistency of data can be verified by
a. Scrutiny
b. Internal Checking
c. External Checking
d. Double Checking

PYQ Jan. 21

(15) The left part of a table providing the description of rows is called.
a. Caption b. Box – head
c. Stub d. Body

PYQ Jan. 21

(16) Sweetness of sweet dish is.
a. An attribute
b. A discrete variable
c. A continuous variable
d. A variable

PYQ July 21

(17) _____ Means separating items according to similar characteristics grouping them into various classes:
a. Classification
b. Editing
c. Separation
d. Tabulation

PYQ July 21

(18) In graphical representation of data, ideographs are also called as:
a. Picto-graphs
b. Asymmetry graphs
c. Symmetry graphs
d. Pictograms

PYQ July 21

(19) A graph that uses vertical bars to represent data is called a:
a. Line graph
b. Scatter plot
c. Vertical graphs
d. Bar graph

PYQ July 21

(20) In a graphical representation of data, the largest numerical value is 45, the smallest numerical value is 25. If classes desired are 4 then which class interval is:-
a. 45 b. 5
c. 20 d. 7.5

PYQ July 21

(21) Data collected on religion from the census reports are:
a. Primary data
b. Unclassified data
c. Sample data
d. Secondary data

PYQ July 21

(22) Data collected on religion from the census reports are:
a. Primary data
b. Unclassified data
c. Sample data
d. Secondary data

Note: Duplicate

PYQ July 21

(23) Which of the following diagram is the most appropriate to represents various heads in total cost?
a. Pie chart
b. Bar graph
c. Multiple Line chart
d. None

PYQ Dec. 21

(24) A national institute arranged its student's data in accordance with different states. This arrangement of data is known as
a. Temporal Data
b. Geographical Data
c. Ordinal Data
d. Cardinal Data

PYQ Dec. 21

(25) Multiple axis line chart is considered when
a. There is more than one time series
b. The units of the variables are different
c. In any case
d. If there are more than one time series and unit of variables are different.

PYQ June 22

(26) If data is collected from a census Report. What type of data it is:-
- a. Time series data
- b. Primary data
- c. Secondary data
- d. Geographical data

PYQ June 22

(27) Sweetness is an
- a. Attribute
- b. Quantity
- c. Quality
- d. a or c

PYQ June 22

(28) Which of the following is not a way of Presenting data?
- a. Tabular form
- b. Textual form
- c. Graphical form
- d. Regression analysis

PYQ June 22

(29) ☆ Which of the following does not form characteristics in dividing the data?
- a. No. of auditors auditing Accounts.
- b. No. of files audited by auditor
- c. No. of files audited less than 6, less than 5, less than 10
- d. File less than, moderate than, higher than

PYQ June 22

(30) Which one is research data?
- ☆ a. Discrete and Continuous
- b. Qualitative and Quantitative
- c. Processed and Unprocessed
- d. Organise and unorganised data

PYQ Dec 22

(31) Which one of the following is a source of primary data?
- a. Government Records
- b. Research Articles
- c. Journals
- d. Questionnaire filled by Enumerators

PYQ Dec 22

(32) Which is the left part of table providing description of the rows?
- a. Caption
- b. Box Head
- c. Stub
- d. Body

PYQ Jun 23

(33) The share holding pattern of ABC Ltd. is as follows:

Share holders	No. of shares in Millions
Promoter	120
FII	25
DII	20
Govt	20
Public	15

What is the difference between central angles (in degree) for shares held by Promoters and Public, in pie chart?
- a. 216
- b. 189
- c. 180
- d. 99

PYQ Jun 23

(34) What does an Ogive curve represent?
- a. The cumulative frequency and class boundary
- b. The frequency and class boundary
- c. The frequency and cumulative frequency
- d. The frequency and class interval

PYQ Jun 23

(35) The following is the data related to the daily income of 86 persons:

Income in ₹	No. of persons:
500-999	15
1000-1499	28
1500-1999	36
2000-2499	7

What is the percentage of persons earning at least ₹ 1,500 per day?
- a. 50%
- b. 45%
- c. 40%
- d. 60%

PYQ Jun 23

(36) For tabulation, 'caption' is
- a. The upper part of the table
- b. The lower part of the table
- c. The main part of the table
- d. The upper part of a table that describes the rows and sub-rows

Answer Key		
1 d	2 a	3 a
4 a	5 b	6 a
7 a	8 a	9 c
10 c	11 d	12 b
13 b	14 a	15 c
16 a	17 a	18 d
19 d	20 b	21 d
22 c	23 a	24 b
25 b	26 c	27 d
28 d	29 d	30 b
31 d	32 c	33 b
34 a	35 a	36 d

Basics, Collection and Presentation of Data

Mock Test Paper Questions

MTP May 18

(1) Statistics is concerned with
- a. Qualitative information
- b. Quantitative information
- c. a or b
- d. Both a & b

MTP May 18

(2) 'Stub' of a table is the _____ part of the table describing the _____.
- a. Left, Columns
- b. Right, Columns
- c. Right, Rows
- d. Left, Rows

MTP Nov 18

(3) ☆ The technician of graphic presentation is extremely helpful in which of the following
- a. Analysing the changes at different points of Time
- b. Analysing cause and effect relationship
- c. Analysing proportional relationship
- d. Analysing the degree of relationship

MTP Nov 18

(4) Statistics Analyses:
- a. Qualitative
- b. Quantitative
- c. Either Qualitative or Quantitative
- d. Quantitative and Qualitative

MTP May 19

(5) Statistics is applied in
- a. Economics
- b. Business Management
- c. Commerce and Industry
- d. All of these

MTP May 19

(6) The primary data are collected by
- a. Interview Method
- b. Observation Method
- c. Questionnaire Method
- d. All of these

MTP May 19

(7) The best method to collect data, in case of a natural calamity, is
- a. Personal Interview
- b. Indirect Interview
- c. Questionnaire Method
- d. Direct Observation Method

MTP May 19

(8) 'Stub' of a table is the
- a. Left part of the table describing the columns
- b. Right part of the table describing the columns
- c. Right part of the table describing the rows
- d. Left part of the table describing the rows

MTP May 19 Series II

(9) The best method to collect data, in case of a natural calamity, is
- a. Personal Interview
- b. Indirect Interview
- c. Questionnaire Method
- d. Direct observation Method

MTP May 19 Series II

(10) The entire upper part of a table is known as
- a. Caption
- b. Stub
- c. Box head
- d. Body

MTP Nov 19

(11) The number of times a particular item occurs in a given data is called its
- a. Variation
- b. Frequency
- c. Cumulative Frequency
- d. None of these

MTP Nov 20

(12) The most appropriate diagram to represent the data relating to the monthly expenditure on different items by a family is ?
- a. Histogram
- b. Pie-diagram
- c. Frequency polygon
- d. Line graph

MTP Apr 21

(13) The best method to collect data in case of natural calamity is
- a. Personal interview.
- b. Telephone interview.
- c. Mailed questionnaire method.
- d. indirect interview.

MTP Nov 21

(14) Which of the following is not an example of continuous variable?
- a. Temperature in India
- b. Profit of Company X
- c. Number of road accidents
- d. A person's height

MTP Oct 21

(15) Statistics is concerned with
- a. Qualitative information
- b. Quantitative information
- c. (a) or (b)
- d. Both (a) and (b).

MTP Oct 21

(16) The primary data are collected by
- a. Interview method
- b. Observation method
- c. Questionnaire method
- d. All these

MTP June 22

(17) Data are said to be _____ if the investigator himself is responsible for the collection of data.
- a. Primary Data
- b. Secondary Data
- c. Mixed of Primary and Secondary Data
- d. None of these

MTP Dec 22 – Series I

(18) The cost of sugar in a month under the heads of raw Materials, labor, direct production, and others were 12, 20, 35, and 23 units respectively. What is the difference between the central angles for the largest and smallest components of the cost of sugar?
- a. 72^0
- b. 48^0
- c. 56^0
- d. 92^0

MTP Dec 22 Series II

(19) Data are said to be _____ if the investigator himself is responsible for the collection of data.
- a. Primary Data
- b. Secondary Data
- c. Primary and Secondary
- d. None of these

MTP Dec 22 Series II

(20) A suitable graph for representing the portioning of total into sub parts in statistics is:
- a. A Pictograph
- b. A Pie Chart
- c. An Ogive
- d. A Histogram

MTP June 2023 Series I

(21) The most accurate mode of data presentation is:
- a. Diagrammatic
- b. Tabulation
- c. Textual presentation
- d. None of these

MTP June 2023 Series I

(22) Which is the left part of the table providing the description of the rows?
- a. Captain
- b. Box head
- c. Stub
- d. Body

Answer Key

1 d	2 d	3 a
4 b	5 d	6 d
7 a	8 d	9 a
10 c	11 b	12 b
13 a	14 c	15 d
16 d	17 a	18 d
19 a	20 b	21 b
22 c		

Frequency Distribution

Past Year Questions

PYQ May 18

(1) Frequency density is used in the construction of
a. Histogram
b. Ogive
c. Frequency polygon
d. None when the classes are of unequal width.

PYQ Nov. 18

(2) The following frequency distribution is classified as

X	12	17	24	36	45
F	2	5	3	8	9

a. Continuous distribution
b. Simple Frequency Distribution
c. Cumulative frequency distribution
d. None of these

PYQ Nov. 18

(3) Histogram is useful to determine graphically the value of
a. Arithmetic mean
b. Median
c. Mode
d. None of these

PYQ Nov. 18

(4) The number of times a particular items occurs in a class interval is called its:
a. Mean
b. Frequency
c. Cumulative frequency
d. None of these

PYQ Nov. 18

(5) An ogive is a graphical representation of
a. Cumulative frequency distribution
b. A frequency distribution
c. Ungrouped data
d. None of these

PYQ Nov. 18

(6)

Class	0-10	10-20	20-30	30-40	40-50
Freq.	4	6	20	8	3

For the class 20-30. Cumulative frequency is:
a. 10 b. 26
c. 30 d. 41

PYQ June 19

(7) Which of the following graph is suitable for cumulative frequency distribution?
a. 'O'give b. Histogram
c. G.M d. A.M

PYQ June 19

(8) Histogram can be shown as
a. Ellipse b. Rectangle
c. Hyperbola d. Circle

PYQ June 19

(9) _____Series is continuous.
a. Open ended
b. Exclusive
c. Close ended
d. Unequal call intervals

PYQ June 19

(10) Ogive graph is used for finding
a. Mean b. Mode
c. Median d. None of these

PYQ June 19

(11) Histogram is used for finding
a. Mode b. Mean
c. First quartile d. None of these

PYQ Nov. 19

(12) The graphical representation of cumulative frequency distribution is called.
a. Histogram
b. Historiagram
c. Ogive
d. None of these

PYQ Nov. 20

(13) Types of cumulative frequencies are:
a. 1 b. 2
c. 3 d. 4

PYQ Jan. 21

(14) From a histogram one cannot compute the approximate value of
a. Mode
b. Standard deviation
c. Median
d. Mean

PYQ Jan. 21

(15) Mode can be obtained from_____
a. Frequency polygon
b. Histogram
c. Ogive
d. All of the above

PYQ Jan. 21

(16) Most of the Commonly used distributions provide
a. Bell – shaped
b. U Shaped
c. J – Shaped Curve
d. Mixed Curve

PYQ Jan. 21

(17) Which of the following is suitable for the graphical representation of a Cumulative frequency distribution?
a. Frequency polygon
b. Histogram
c. O give
d. Pie chart

PYQ July 21

(18) Frequency density of a class interval is the ratio of _____.
a. Class frequency to the total frequency
b. Class length to class frequency
c. Class frequency to the cumulative frequency
d. Frequency of that class interval to the corresponding class length.

PYQ Dec. 21

(19) Ogive curves are used to determine
a. Mean b. Median
c. Mode d. Range

PYQ June 22

(20) Less than 'o' give curve give-
a. Mean b. Median
c. Mode d. M D

PYQ June 22

(21) Histogram can be drawn when
a. Class interval are equal
b. Class interval are unequal
c. Frequency of class interval are equal
d. None of these

PYQ June 22

(22) If the cumulative frequency are plotted on axis then which type of curve is formed
a. Ogive
b. Frequency curve
c. Histogram
d. Frequency Polygon

PYQ Dec 22

(23) The suitable formula for computing the number of class intervals is (N is total frequency)
☆ a. 3.322 logN b. 0.322 logN
c. 1 + 3.322 logN d. 1 – 3.322 logN
Note: Out of Syllabus

PYQ Dec 22

(24) Ogive for more than type and less than type distributions intersect at
a. Mean b. Median
c. Mode d. Origin

PYQ July 21

(25) The modes of presentation of data are:
a. Textual, Diagrammatic and Internal presentation
b. Tabular, Textual and Internal presentation
c. Textual, Tabular and Diagrammtic presentation
d. Tabular, Diagrammatic and Internal Presentation

Answer Key

1	a	2	b	3	c
4	b	5	a	6	c
7	a	8	b	9	b
10	c	11	a	12	c
13	b	14	b	15	b
16	a	17	c	18	d
19	b	20	b	21	d
22	a	23	c	24	B
25	c				

Frequency Distribution

Mock Test Paper Questions

MTP May 18

(1) The pair of averages whose value can be determined graphically?
a. Mean and median
b. Mode and mean
c. Mode and median
d. None of these

MTP May 18

(2) The difference between the upper and lower limit of a class is called
a. Class interval b. Mid value
c. Class boundary d. frequency

MTP May 18

(3) What is exclusive Series
- a. In which both upper and lower limit are not included in class frequency
- b. In which lower limit is not included class frequency
- c. In which upper limit is not included in class frequency
- d. None of the above

MTP Nov 18

(4) ☆ For frequency distribution and time series which form of presentation is rarely used.
- a. Diagrammatic presentation
- b. Graphic
- c. both Diagrammatic and Graphic
- d. More information required

MTP Nov 18

(5) Frequency Polygon is meant for ---------frequency distribution
- a. Single
- b. Double
- c. Multi
- d. None of the above

MTP Nov 18

(6) Ogive is also called as
- a. frequency graph
- b. cumulative frequency graph
- c. Histogram
- d. None of these

MTP Nov 18

(7) There are _____ types of frequency curves
- a. 1 b. 2
- c. 3 d. 4

MTP Nov 18

(8) The J shaped curve starts with a _____frequency
- a. Minimum b. Maximum
- c. Either a & b d. none

MTP Nov 18

(9) Mid values are also called
- a. Lower limit
- b. Upper limit
- c. Class mark
- d. None

MTP May 19

(10) Pie-diagram is used for
- a. Comparing different components and their relation to the total
- b. representing qualitative data in a circle
- c. Representing quantitative data in circle
- d. (b) or (c).

MTP May 19 Series II

(11) A frequency distribution
- a. Arranges observations in an increasing order
- b. Arranges observation in terms of a number of groups
- c. Relates to a measurable characteristic
- d. All of these

MTP May 19 Series II

(12) Mode of a distribution can be obtained from
- a. Histogram
- b. Less than type ogives
- c. More than type ogives
- d. Frequency polygon

MTP Nov 19

(13) Frequency density is used in the construction of.
- a. Histogram
- b. Ogive
- c. Frequency Polygon
- d. None of these

MTP May 20

(14) The difference between Upper limit and lower limit of a class is called
- a. Class Interval
- b. Class boundaries
- c. Mid-Value
- d. Frequency

MTP May 20

(15) Median of a distribution can be obtained from
- a. Frequency polygon
- b. Histogram
- c. Less than type ogives
- d. None of these.

MTP Nov 20

(16) The distribution of income is an example of frequency distribution of
- a. Continuous variable
- b. A discrete variable
- c. An attribute
- d. (b) or (c)

MTP March 21

(17) ☆ Histogram is used for presentation of the following type of series
a. Time Service
b. Continuous Series
c. Discrete Series
d. Individual Series

MTP March 21

(18) The graphical representation of cumulative frequency distribution is called–
a. Histogram
b. Pie Chart
c. Frequency Polygon
d. Ogive

MTP March 21

(19) The difference between upper limit and lower limit of a class is called:
a. Class Interval b. Class boundary
c. Mid-value d. Frequency

MTP Apr 21

(20) The following frequency distribution

x	12	17	24	36	45
f	2	5	3	9	8

is classified as-
a. Continuous b. Discrete
c. Cumulative d. None of these

MTP Oct 21

(21) The curve obtained by joining the points, whose x- coordinates are the upper limits of the class-intervals and y coordinates are corresponding cumulative frequencies is called
a. Ogive
b. Histogram
c. Frequency Polygon
d. Frequency Curve

MTP March 22

(22) Median of a distribution can be obtained from
a. Frequency polygon
b. Histogram
c. ogives
d. None of these.

MTP March 22

(23) For the non-overlapping classes 0—19 , 20—39 , 40—59 the class mark of the class 0—19 is
a. 0 b. 19
c. 9.5 d. none of these

MTP March 22

(24) For open-end classification, which of the following is the best measure of central tendency?
a. AM b. GM
c. Median d. Mode

MTP June 22

(25) Histogram is used for finding:
a. Mode b. Mean
c. First Quartile d. None

MTP June 22

(26) Relative frequency for a particular class lies between:
a. 0 and 1
b. 0 and 1, both inclusive
c. -1 and 0
d. -1 and 1

MTP June 22

(27) Less than type and more than type Ogives meet at a point known as:
a. Mean b. Median
c. Mode d. None of these

MTP Dec 22 – Series I

(28) The distribution of profits of a company follows:
a. J-shaped frequency curve
b. U-shaped frequency curve
c. Bell-shaped frequency curve
d. Any of these

MTP Dec 22 – Series I

(29) Median of a distribution can be obtained from:
a. Histogram
b. Frequency Polygon
c. Less than type ogives
d. none of these

MTP Dec 22 – Series I

(30) Frequency density corresponding to a class interval is the ratio of
a. Class Frequency to the Total Frequency
b. Class Frequency to the class Length
c. Class frequency to the class Frequency
d. Class Frequency to the Cumulative Frequency.

MTP Dec 22 – Series II

(31) The number of times a particular items occurs in a class interval is called its:
a. Mean
b. Cumulative Frequency
c. Frequency

d. None of the above

MTP Dec 22 – Series II

(32) An Ogive is a graphical representation of:
a. Cumulative Frequency distribution
b. Ungrouped Data
c. A frequency distribution
d. None of the above

MTP Dec 22 Series II

(33) Histogram can be shown as:
a. Ellipse b. Rectangle
c. Hyperbola d. Circle

MTP Dec 22 Series II

(34) _____ Series is continuous.
a. Open ended
b. Exclusive
c. Close ended
d. Unequal class intervals

MTP Dec 22 Series II

(35) Ogive graph is used for finding:
a. Quartiles b. Deciles
c. Median d. All of these

MTP Dec 22 Series II

(36) Histogram is useful to determine graphically the value of:
a. AM b. Mode
c. Median d. None of these

MTP June 2023 Series I

(37) Ogive for more than type and less than distributions intersect at
a. Means b. Median
c. Mode d. Origin

MTP June 2023 Series II

(38) Perpendicular is drawn from the point of intersection of 2 Ogives on the horizontal axis. The value of x denotes:
a. First Quartile
b. Second Quartile
c. Third Quartile
d. Any of the above

MTP June 2023 Series II

(39) In study of impact of novel Coronavirus in the world, a frequency graph is plotted for age on the x axis and fatalities on the y axis. Which frequency curve is most expected as the output?
a. J shaped curve
b. U shaped curve
c. Bell shaped curve
d. Mixed shaped curve

Answer Key

1	c	2	a	3	c
4	a	5	a	6	b
7	d	8	a	9	c
10	a	11	d	12	a
13	a	14	a	15	c
16	a	17	b	18	d
19	a	20	b	21	a
22	c	23	c	24	c
25	a	26	a	27	b
28	c	29	c	30	b
31	c	32	a	33	b
34	b	35	d	36	b
37	b	38	b	39	a

Numerical Problems

Past Year Questions

PYQ July 21

(1) There are 200 employees in an office in which 150 were married. Total male employees were 160 out of which 120 were married. What was the number of female unmarried employees?
a. 30 b. 40
c. 50 d. 10

PYQ Dec. 21

(2) In a study about the male and female students of commerce and Science departments of a college in 5 years, the following data's were obtained:

1995	2000
70% female students	75% female students
65% read commerce	40% read science
20% of male students read science	50% of female students read commerce
3000 total no. of students	3600 total no. of students

After combining 1995 and 2000 if x denotes the ratio of female commerce students to female Science student and y denotes the ratio of male commerce student to male Science student, then
a. $x = y$ b. $x > y$
c. $x < y$ d. $x \geq y$

PYQ Dec. 21

(3) A student makes in five subject S1, S2, S3, S4 and S5 are 86, 79, 90, 88 and 89. If we need to draw a Pie chart to represent these markers, then what will be the Central angle for S3.
a. 103.2^0 b. 75^0
c. 105.6^0 d. 94.8^0

PYQ Dec. 21

(4) The following data relate to the marks of a group of students:

Marks	<10	<20	<30	<40	<50
F	15	38	65	84	100

How many students got marks more than 30?

a. 65 b. 50
c. 35 d. 43

PYQ Dec. 21

(5) The following data relate to the marks of 48 students in Statistics:

56 10 54 38 21 43 12 22
48 51 39 26 12 17 36 19
48 36 15 33 30 62 57 17
5 17 45 46 43 55 57 38
43 28 32 35 54 27 17 16
11 43 45 2 16 46 28 45

What are the frequency densities for the class intervals 30-39, 40-49, 50-59?

a. 0.20, 0.50, 0.90
b. 0.70, 0.90, 1.10
c. 0.1875, 0.1667, 0.2083
d. 0.9, 1.10, 0.7

PYQ June 22

(6) The profitability of a blue chip company is shown by -

a. Bell Shape curve
b. U shake curve
c. J Shape curve
d. Mixed curve

Answer Key

1 d 2 c 3 b
4 c 5 d 6 a

Numerical Problems

Mock Test Paper Questions

MTP Nov 19

(1) The width of each of ten classes in a frequency distribution is 2.5 and the lower class boundary of the lowest class is 10.6. Which one of the following is the upper class boundary of the highest class?

a. 35.6 b. 33.1
c. 30.6 d. None of these

Note: Wrong Ans in MTP

MTP Nov 19

(2) ☆ Let L be the lower class boundary of a class in a frequency distribution and m be the mid point of the class. Which one of the following is the higher class boundary of the class?

a. $m+\frac{m+2}{2}$ b. $L+\frac{m+L}{2}$
c. 2m-L d. m-2L

MTP May 20

(3) Find the number of observations between 250 and 300 from the following data

Value	More than 200	More than 250	More than 300	More than 350
No of observation	56	38	15	0

a. 56 b. 23
c. 15 d. 8

MTP May 20

(4) The following data relate to the marks of a group of students:

Marks:	Below 10	Below 20	Below 30	Below 40	Below 50
No. of students	15	38	65	84	100

How many students got marks more than 30?

a. 65 b. 50
c. 35 d. 43

MTP Nov 20

(5) The following data relates to the incomes of 90 persons:

Income in ₹	1500-1999	2000-2499	2500-2999	3000-3499
No. of persons	13	32	20	25

Which is the percentage of persons earning more than ₹ 2000?

a. 45 b. 85.56
c. 52 d. 55

MTP Nov 20

(6) The number of accidents for seven days in a locality are given below :

No. of accidents : 0 1 2 3 4 5 6
Frequency : 12 15 23 30 9 3 2

What is the number of cases when 3 or less accidents occurred?

a. 56 b. 6
c. 80 d. 87

MTP March 21

(7)

No. of accidents	Frequency
0	36
1	27
2	33
3	29
4	24
5	27
6	18
7	9

In how many cases 5 or more accidents occur?

a. 96 b. 133
c. 78 d. 54

MTP Nov 21

(8) *Salaries of employees working in ABC limited is as follows:*

Salary	Below 10	Below 20	Below 50	Below 100	Below 1000
No. of employees	28	34	65	84	123

Find the number of employees with salaries more than 50k?

a. 65 b. 84
c. 39 d. 58

MTP Oct 21

(9) *The following data relate to the incomes of 86 persons:*

Income	500-999	1000-1499	1500-1999	2000-2499
Freq.	15	28	36	7

What is the percentage of persons earning more than ₹ 1500?

a. 50 b. 45
c. 40 d. 60

MTP Oct 21

(10) *The following data relate to the marks of a group of students:*

Marks	<10	<20	<30	<40	<50
Freq	15	38	65	84	100

How many students got marks more than 30?

a. 65 b. 50
c. 35 d. 43

MTP March 22

(11) *Cost of sugar in a month under the heads raw Materials, labour, direct production and others were 12, 20, 35 and 23 units respectively. What is the difference between the central angles for the largest and smallest components of the cost of sugar?*

a. 72^0 b. 48^0
c. 56^0 d. 92^0

MTP March 22

(12) ☆ *In a study relating to the laborer's of a jute mill in West Bengal, the following information was collected. 'Twenty per cent of the total employees were females and forty per cent of them were married. Thirty female workers were not members of Trade Union. Compared to this, out of 600 male workers 500 were members of Trade Union and fifty per cent of the male workers were married. The unmarried non-member male employees were 60 which formed ten per cent of the total male employees. The unmarried non-members of the employees were 80'. On the basis of this information, the ratio of married male non-members to the married female non-members is*

a. 1: 3 b. 3: 1
c. 4: 1 d. 5: 1

MTP June 22

(13) *The frequency of the Class 20-30 in the following data is;*

Marks	0-10	10-20	20-30	30-40	40-50
Freq	5	13	28	34	38

a. 5 b. 28
c. 15 d. 13

PYQ Jul 21, MTP June 22

(14) *There were 200 employees in an office in which 150 were married. Total male employees were 160 out of which 120 were married. What was the female unmarried employees?*

a. 30 b. 10
c. 10 d. 50

MTP Dec 22 Series II

(15) *From the following data, cumulative frequency for the class 20 – 30 is*

Class	0-10	10-20	20-30	30-40	40-50
Freq	4	6	20	8	3

a. 26 b. 10
c. 41 d. 30

Answer Key

1 a	2 c	3 b
4 c	5 b	6 c
7 d	8 d	9 a
10 c	11 d	12 c
13 b	14 b	15 d

Chapter 14: Measures of Central Tendency and Dispersion

Arithmetic Mean

Past Year Questions

PYQ May 18

(1) If the variables x and z are so related that $z = ax+b$ for each where a and b are constant, then $\bar{z} = a\bar{x} + b$

a. True b. False
c. Both d. None of these

PYQ May 18

(2) If each item is reduced by 15 A. M is

a. Reduced by 15
b. Increased by 15
c. Reduced by 10
d. None of these

PYQ May 18

(3) The average of a series of overlapping averages, each of which is based on a certain number of item within a series is know as.

a. Moving average
b. Weighted average
c. Simple average
d. None of these

PYQ Nov. 18

(4) The mean of 20 items of a data is 5 and if each item is multiplied by 3, then the new mean will be

a. 5 b. 10
c. 15 d. 20

PYQ Nov. 18

(5) The algebraic sum of the deviation of a set of values from their arithmetic mean is

a. >0 b. = 0
c. <0 d. None of these

PYQ May 18

(6) Which one of the following is not a central tendency?

a. Mean Deviation
b. Arithmetic mean
c. Median
d. Mode

PYQ Nov. 18

(7) If total frequencies of three series are 50, 60 and 90 and their means are 12, 15 and 20 respectively, then the mean of their composite series is

a. 16 b. 15.5
c. 16.5 d. 14.5

PYQ Nov. 18

(8) If the mean of the following distribution is 6 then the value of P is

☆

X	2	4	6	10	P+5
F	3	2	3	1	2

a. 7 b. 5
c. 8 d. 11

PYQ June 19

(9) The AM of 15 observation is 9 and the AM of first 9 observation is 11 and then AM of remaining observation is

☆

a. 11 b. 6
c. 5 d. 9

PYQ Nov. 19

(10) $\sum_{i=1}^{n}(\bar{x} - x_i)$ is equal to

a. $\bar{x}\sum_{i=1}^{n} x_i$
b. $n(\bar{x}\sum_{i=1}^{n} x_i)$
c. $\bar{x} - n\bar{x}$
d. Zero

PYQ July 21

(11) There are n numbers. When 50 is subtracted from each of these number the sum of the numbers so obtained is – 10. When 46 is subtracted from each of the original n numbers, then the sum of numbers so obtained is 70. What is the mean of the original n numbers?

☆

a. 56.8 b. 25.7
c. 49.5 d. 53.8

PYQ July 21

(12) The mean of 'n' observation is 'x'. If k is added to each observation, then the new mean is.

a. k b. xk
c. x – k d. x +k

PYQ Dec. 21

(13) If there are 3 observations 15, 20, 25 then the sum of deviation of the observations from their AM is

a. 0 b. 5
c. -5 d. 10

PYQ Dec. 21

(14) If average mark for a group of 30 girls is 80, a group of boys is 70 and combined average is 76, then how many are in the boy's group?

a. 21 b. 20
c. 22 d. 19

PYQ Dec. 21

(15) ☆ For a data having odd number of values, the difference between the first and the middle value is equal to the difference between the last and the middle value; similarly the difference between the second and middle values is equal to that of second last and middle value so on. Therefore, the middle value is equal to

a. Half of the range
b. Half of standard deviation
c. Mode
d. Mean

PYQ June 22

(16) When each value does not have equal importance then

a. A M
b. G M
c. H M
d. Weighted Average

PYQ June 22

(17) ☆ The mean of 20 observation is 38. If two observation are taken as 84 and 36 instead of 48 and 63 find new means.

a. 38.45 b. 41.15
c. 37.55 d. 40.05

PYQ Dec 22

(18) ☆ The mean of 50 observations is 36. If two observations 30 and 42 are to be excluded, then the mean of the remaining observations will be:

a. 36 b. 38
c. 48 d. 50

PYQ Dec 22

(19) ☆ The average age of 15 students in a class is 9 years. Out of them, the average age of 5 students is 13 years and that 8 students is 5 years. What is the average of remaining 2 students?

a. 5 years b. 9 years
c. 10 years d. 15 years

PYQ Jun 23

(20) A professor has given assignment to students in a Statistics class. A student Jagan computes the arithmetic mean and standard deviation for a set of 100 observations as 50 and 5 respectively. Later on, Sonali points out to Jagan that he has made of mistake in taking one observation as 100 instead of 50. What would be the correct mean if the wrong observation is corrected?

a. 50.5 b. 49.9
c. 49.5 d. 50.1

PYQ Jun 23

(21) Find the mean of the following data

Class interval	Frequency
10-20	9
20-30	13
30-40	6
40-50	4
50-60	6
60-70	2
70-80	3

a. 23.7 b. 35.7
c. 39.7 d. 43.7

PYQ Jun 23

(22) A professor has given assignment to students in a Statistics class. A student Jagan computes the arithmetic mean and standard deviation for a set of 100 observations as 50 and 5 respectively. Later on, Sonali points out to Jagan that he has made of mistake in taking one observation as 100 instead of 50. What would be the correct mean if the wrong observation is corrected?

a. 50.5 b. 49.9
c. 49.5 d. 50.1

Answer Key

1 a	2 a	3 a
4 c	5 b	6 a
7 c	8 a	9 b
10 d	11 c	12 d
13 a	14 b	15 d
16 d	17 c	18 a
19 d	20 c	21 b

Arithmetic Mean

Mock Test Paper Questions

MTP May 18

(1) The mean of first 3 terms is 14 and the mean of next 2terms is 18. The mean of 5 numbers is

a. 14.5 b. 15
c. 14 d. 15.6

MTP Nov 18

(2) If the mean of the set of observations $x_1, x_2, x_3, ..., x_n$, is $\bar{x}$, then the mean of the observation $x_1 + ki$, where $i = 1,2,3, \ldots\ldots n$

☆

a. $\bar{x} + k(n+1)$
b. $\bar{x} + kn$
c. $\bar{x} + \frac{k}{n}$
d. $\bar{x} + \frac{k}{2}(n+1)$

MTP Nov 18

(3) The mean salary for a group of for a group of 50 male workers is Rs.4800 per month and that for a group of 50 female workers is Rs. 5600. the combined mean salary is

a. 5100 b. 5200
c. 5300 d. 5400

MTP Nov 18

(4) The mean age of a group of 100 men and women is 25 years. If the mean age of the group of men is 26, then that of the group of women is 21 then the ratio of women and men in the group:

a. 1:1 b. 1:2
c. 1:3 d. 1:4

MTP May 19, ICAI SM

(5) If the relationship between two variables u and v are given by $2u + v + 7 = 0$ and if the AM of u is 10, then the AM of v is

a. 17 b. -17
c. -27 d. 27

MTP May 19 Series II

(6) If there are 3 observations 15, 20, 25 then the sum of deviation of the observations from their AM is

a. 0 b. 5
c. -5 d. None of these

MTP Nov 19

(7) The mean of the values of 1, 2, 3 ....., n with respective frequencies x, 2x, 3x, ... nx is.

a. $\frac{n+1}{2}$ b. $\frac{n}{2}$
c. $\frac{2n+1}{3}$ d. $\frac{2n+1}{6}$

MTP Nov 19

(8) The mean of four observations is 10 and when a constant a is added to each observation, the mean becomes 13. The value of a is

a. 2 b. -3
c. 3 d. None of these

MTP Nov 19, ICAI SM

(9) The average salary of a group of unskilled workers is Rs.10,000 and that of a group of skilled workers is Rs.15,000. If the combined salary is Rs.12,000, then what is the percentage of skilled workers?

a. 40% b. 50%
c. 60% d. None of these

MTP Nov 19

(10) The average of n numbers is x. If each of the numbers is multiplied by (n+1); then the average of new set of numbers is

a. X b. $\frac{x}{n+1}$
c. $(n+1)x$ d. None of these

MTP Nov 19

(11) The average weight of 8 person increases by 1.5 kg, if a person weighing 65 kg replaced by a new person, what would be the weight of the new person?

☆

a. 76 kg b. 80 kg
c. 77 kg d. None of these

MTP May 20

(12) If the relationship between two variables u and v are given by $2u + v + 7 = 0$ and if the AM of u is 10, then the AM of v is

a. 17 b. –17
c. –27 d. 27

ICAI SM, MTP Nov 20

(13) Two variables assume the values 1,2, 3,.. 5 with frequencies as 1, 2, 3, ..5 , then what is the AM ?

a. 11/3 b. 15/8
c. 4.86 d. 10

MTP March 21

(14) The sum of the squares of deviations of a set of observations has the smallest value, when the deviations are taken from their:

a. A.M b. H.M
c. G.M d. None

MTP March 21

(15) Let the mean of the variable 'x' be 50, then the mean of u=10+5x will be:

a. 250 b. 260
c. 265 d. 273

MTP March 21

(16) If sum of squares of the values = 3390, N = 30 and standard deviation = 7, find out the mean.

☆ a. 113 b. 210
c. 8 d. None of these

MTP March 21

(17) Which of the following measures of central tendency cannot be calculated by graphical method?

a. Mean b. Mode
c. Median d. Quartile

MTP Apr 21

(18) The mean salary for a group of 40 female workers is 5000 per month and that for a group of 60 male workers is 6000 per month. What is the combined mean salary?

a. 6500 b. 6200
c. 6160 d. 5600

MTP Mar 21, MTP Apr 21

(19) The mean of the variable x is 50, then the mean of u = 10+5x will be

a. 250 b. 260
c. 265 d. 273

MTP Apr 21

(20) The sum of mean and SD of a series is a + b, if we add 2 to each observations of the series then the sum of the mean and SD is

a. a+b+2 b. 6-a+b
c. 4+a-b d. a+b+4

MTP Nov 21

(21) At ABC ltd, the average age of employees is 36. Average age of male employees is 38 and that of females is 32. Find the ratio of female to male in the company.

a. 1:3 b. 2:1
c. 1:2 d. 3:1

MTP Nov 21

(22) The mean height of girls in class in 162cm while for boys is 182cm. The ratio of number of girls: boys is 1:2. Find the mean height of the whole class

a. 170 cm b. 180 cm
c. 154 cm d. None of these

Note: Correct Ans is 175.33

MTP Nov 21

(23) The average of 10 observations is 14.4. If the average of first four observations is 16.5. The average of remaining 6 observations is :

a. 13.6 b. 13.0
c. 13.2 d. 12.5

MTP Oct 21

(24) Mean of 25,32,43,53,62,59,48,31,24,33 is

a. 44 b. 43
c. 42 d. 41

MTP Oct 21

(25) If the A.M of any distribution be 25 & one term is 18. Then the deviation of 18 from A.M is

a. 7 b. -7
c. 43 d. None of these

MTP Oct 21

(26) The algebraic sum of the deviations of a frequency distribution from its mean is always,

a. greater than zero
b. less than zero
c. zero
d. a non-zero number

MTP Oct 21

(27) Pooled Mean is also called

a. Mean
b. Geometric Mean
c. Grouped Mean
d. none

MTP March 22

(28) If average marks for agroup of 30 girls is 80 , a group of boys is 70 and combined average is 76, ☆ then how many boys are in the group ?

a. 21 b. 20
c. 22 d. 19

MTP March 22

(29) If there are three observations 15, 20, 25, then the sum of deviation of the observations from their AM is.

a. 0 b. 5
c. -5 d. 10

MTP March 22

(30) The mean weight of 15 students is 110 kg. The mean weight of 5 of them is 100 kg. and of another five students is 125 kg. then the mean weight of the remaining students is :

a. 120 b. 105
c. 115 d. None of these

MTP June 22

(31) A batsman in his 20th innings makes a score of 120 and thereby increases his average by 5. ☆ What is his average after 20th innings?

a. 60 b. 55
c. 65 d. 70

Correct Ans is 25 (all options in MTP are wrong)

MTP June 22

(32) The mean of first three terms is 14 and mean of next two terms is 18. The mean of all five terms is

a. 14.5 b. 15
c. 14 d. 15.6

MTP Dec 22 – Series I

(33) In a group of persons, average weight is 60 kg. If the average of males and females taken separately is 80 kg and 50 kg respectively, find the ratio of the number of males to that of females.

a. 2:3 b. 3:2
c. 2:1 d. 1:2

MTP Dec 22 – Series I

(34) The mean of 100 students was 45. Later, it was discovered that the marks of two students were misread as 85 and 54 instead of 58 and 45. Find correct mean.

a. 68 b. 36
c. 44.64 d. 52

MTP Dec 22 Series II

(35) The AM of 15 observations is 9 and the AM of first 9 observations is 11 and then AM of remaining observations is:

a. 11 b. 6
c. 5 d. 9

MTP June 2023 Series I

(36) The mean of 100 observations is 50. If one of the observations which was 50 is replaced by 40, the resulting mean will be:

a. 40 b. 49.90
c. 50 d. None of these

MTP June 2023 Series I

(37) The mean annual salary of all employees in a company is ₹ 25,000. The mean salary of male and female employees is ₹ 27,000 and ₹ 17,000 respectively. Find the percentage of males and females employed by the company

a. 60% and 40% b. 70% and 25%
c. 70% and 30% d. 80% and 20%

MTP June 2023 Series I

(38) The average age of 15 numbers in a class is 9 years. Out of them, the average age of 5 students is 13 years and that 8 students is 5 years. What is the average of remaining 2 students?

a. 5 years b. 9 years
c. 10 years d. 15 years

MTP June 2023 Series II

(39) The students of a class 10th have an average weight of 50 kg. The strength of the class is 49 students. On including the weight of the principal, the average weight shoots up by 0.8 kg. Find the weight of the principal?

a. 75 b. 90
c. 85 d. None of these

MTP June 2023 Series II

(40) The average of (p+q) consecutive numbers starting from 1 is 'r'. If 's' is added to each of the numbers then the new average will be?

a. r + s b. r + (s/2)
c. (r + (p+q+s))/(p+q) d. None of these

MTP June 2023 Series II

(41) The average weight of 40 people is increased by 2.4 kg when one man weight 73 kg is replaced by another man. Find the weight of the new man?

a. 121 b. 169
c. 154 d. 149

MTP June 2023 Series II

(42) The average salary of the whole employees in a company is ₹ 400 per day. The average salary of officers is ₹ 800 per day and that of clerks is ₹ 320 per day. If the number of officers is 40, then find the number of clerks in the company?

a. 50 b. 100
c. 150 d. 200

MTP June 2023 Series II

(43) The average of 6 numbers is 30. If the average of the first four is 25 and that of the last three is 35, the fourth number is

a. 25 b. 30
c. 35 d. 40

MTP June 2023 Series II

(44) A student marks were wrongly entered as 85 instead of 45. Due to that the average marks for the whole class got increased by one-fourth. The no. of students in the class is?

a. 80 b. 160
c. 40 d. 20

Answer Key

1	d	2	d	3	b
4	d	5	c	6	a
7	c	8	c	9	a
10	c	11	c	12	c
13	a	14	a	15	b
16	c	17	a	18	d
19	b	20	a	21	c
22	d	23	b	24	d
25	b	26	c	27	c
28	b	29	a	30	b
31	c	32	d	33	d
34	c	35	b	36	b
37	d	38	d	39	B
40	a	41	b	42	d
43	a	44	b		

Median and Partition Values

Past Year Questions

PYQ May 18

(1) For 899, 999, 391, 384, 390, 480, 485, 760, 111, 240. Rank of median

a. 2.75 b. 5.5
c. 8.25 d. None of these

PYQ Nov. 18

(2) The median of the data 5, 6, 7, 8, 9, 10, 11, 12, 15, 18, 18 and 19 is

a. 10.5 b. 10
c. 11 d. 11.5

PYQ June 19

(3) Which of the following is positional average?

a. Median b. GM
c. HM d. AM

PYQ June 19

(4) For the distribution

x	1	2	3	4	5	6
f	6	9	10	14	12	8

The value of median is

a. 3.5 b. 3
c. 4 d. 5

PYQ Nov. 19

(5) The deviations are minimum when taken from:

a. Mean b. Median
c. Mode d. None of these

PYQ Nov. 19

(6) Find the median of the following.

Class	0-10	10-20	20-30	30-40	40-50
Freq.	2	3	4	5	6

a. 35 b. 32
c. 36 d. 37.5

PYQ Nov. 19

(7) Find the median of the following:

Class	0-10	10-20	20-30	30-40	40-50
Freq.	5	15	28	10	2

a. 10.57 b. 23.57
c. 25 d. None of these

PYQ Nov. 20

(8) Which measure is suitable for open-end classification?

a. Median b. Mean
c. Mode d. GM

PYQ Nov. 20

(9) 50^{th} Percentile is equal to

a. Median b. Mode
c. Mean d. None of these

PYQ Nov. 20

(10) Which one of the these is least affected by extreme value?

a. Mean b. Median
c. Mode d. None of these

PYQ Nov. 20

(11) Ten matches data is given. Then which of the following cannot be found?

a. Least score
b. Highest score
c. Best score
d. Median score

PYQ Jan. 21

(12) Which of the following measure does not possess mathematical properties?
a. Arithmetic mean
b. Geometric mean
c. Harmonic mean
d. Median

PYQ Dec. 21

(13) The median value of the set of observations 48, 36, 72, 87, 19, 66, 56, 91 is
a. 53 b. 87
c. 61 d. 19

PYQ Dec. 21

(14) ☆ Along a road there are 5 buildings of apartments, marked as 1, 2, 3, 4, 5. Number of people residing in each building is available. A bus stop is to be setup near one of the buildings so that the total distance walked by the resident to the bus stop from their buildings must be kept minimum. One must consider involving _____ to find the position of the bus stop.
a. Mean b. Median
c. Mode d. Weighted mean

PYQ June 22

(15) The 3rd decile for the numbers 15,10, 20, 25, 18, 11, 9, 12 is
a. 13 b. 10.70
c. 11.00 d. 11.50

PYQ Dec 22

(16) The relationship between two variables x and y is given by $4x - 10y = 20$. If the median value of the variable x is 10 then what is median value of variable y?
a. 1.0 b. 2.0
c. 3.0 d. 4.0

PYQ Dec 22

(17) Mean deviation is minimum when deviations are taken from:
a. Mean b. Median
c. Mode d. Range

PYQ Dec 22

(18) The median of the observations 42, 72, 35, 92, 67, 85, 72, 81, 51, 56 is:
a. 69.5 b. 72
c. 64 d. 61.5

PYQ Jun 23

(19) The median of the following set of observations: 24, 18, 36, 42, 30, 28, 21, 29, 25, 33 is
a. 26.5 b. 27.5
c. 28.5 d. 29.5

PYQ Jun 23

(20) For a given data set: 5, 10, 3, 6, 4, 8, 9, 3, 15, 2, 9, 4, 19, 11, 4; what is the median?
a. 8 b. 6
c. 4 d. 9

Answer Key

1	b	2	a	3	a
4	c	5	b	6	b
7	b	8	a	9	a
10	b	11	c	12	d
13	c	14	b	15	b
16	b	17	b	18	a
19	c	20	b		

Median and Partition Values

Mock Test Paper Questions

MTP May 19

(1) For open-end classification, which of the following is the best measure of central tendency?
a. AM b. GM
c. Median d. Mode

MTP May 19

(2) The presence of extreme observations does not affect
a. AM b. Median
c. Mode d. Any of these

MTP May 19

(3) Quartiles are the values dividing a given set of observations into
a. Two equal parts
b. Four equal parts
c. Five equal parts
d. None of these

MTP May 19

(4) What is the value of the first quartile for observations 15, 18, 10, 20, 23, 28, 12, 16?
a. 17 b. 16
c. 12.75 d. 12

MTP May 19 Series II

(5) The presence of extreme observations does not affect
a. AM b. Median
c. Mode d. Any of these

MTP May 19 Series II

(6) The third decile for the numbers 15, 10, 20, 25, 18, 11, 9, 12 is
a. 13 b. 10.70
c. 11 d. 11.50

MTP Nov 19

(7) The third decile for the numbers 15, 10, 20, 25, 18, 11, 9, 12 is
a. 13 b. 10.7
c. 11 d. 11.50

MTP Nov 19

(8) For open-end classification, which of the following is the best measure of central tendency?
a. AM b. GM
c. Median d. Mode

MTP Nov 19

(9) The presence of extreme observations does not affect
a. AM b. Median
c. Mode d. None of these

MTP Nov 19

(10) Two variables x and y are given by $y = 2x - 3$. If the median of x is 20, what is the median of y?
a. 20 b. 40
c. 37 d. 35

MTP May 20

(11) For open-end classification, which of the following is the best measure of central tendency?
a. AM b. GM
c. Median d. Mode

MTP May 20

(12) In case of an even number of observations which of the following is median?
a. Any of the two middle-most value
b. The simple average of these two middle values
c. The weighted average of these two middle values
d. Any of these

MTP May 20

(13) Two variables x and y are given by $y = 2x - 3$. If the median of x is 20, what is the median of y?
a. 20 b. 40
c. 37 d. 35

MTP Nov 20

(14) Quartile can be determined graphically using
a. Ogive
b. Histogram
c. Pie-chart
d. Frequency polygon

MTP Apr 21

(15) The point of intersection of less than ogive and greater than ogive curve is gives us
☆ a. Mean b. Mode
c. Median d. H.M

MTP Apr 21

(16) The median of the data 13, 8 ,11, 6, 4, 15, 2, 18 is
a. 5 b. 8
c. 11 d. 9.5

MTP Apr 21

(17) What is the value of the first quartile for observations 15, 18, 10, 20, 23, 28, 12, 16?
a. 17 b. 16
c. 12.75 d. 12

MTP Nov 21

(18) Find D_6 for the following observations. 7, 9, 5, 4, 10, 15, 14, 18, 6, 20
a. 11.40 b. 12.40
c. 13.40 d. 13.80

MTP Oct 21

(19) The median of 27, 30, 26, 44, 42, 51, 37 is
a. 30 b. 42
c. 44 d. 37

MTP March 22

(20) The median value of the set of observations 48, 36, 72, 87, 19, 66, 56 and 91
a. 53 b. 87
c. 61 d. 19

MTP June 22

(21) The first Quartile is 142 and Semi-Inter Quartile Range is 18 , then the value of Median is:
☆ a. 151 b. 160
c. 178 d. None of these

MTP Dec 22 – Series I

(22) Calculate the value of 3rd quartile from the following data 40, 35, 51, 21, 25, 16, 29, 27, 32

a. 37.50 b. 30.25
c. 25 d. 35

MTP Dec 22 Series II

(23) Which of the following is positional average?

a. Median b. GM
c. HM d. AM

MTP Dec 22 Series II

(24) For the distribution, calculate Median

X	1	2	3	4	5	6
F	6	9	10	14	12	8

a. 3.5 b. 3
c. 4 d. 5

MTP June 2023 Series I

(25) The relationship between two variable x and y is given by $4x - 10y = 20$. If the median value of the variable x is 20 then what is median value of variable y?

a. 1.0 b. 2.0
c. 3.0 d. 6.0

MTP June 2023 Series I

(26) The median of the observations 42, 72, 35, 92, 67, 85, 72, 81, 51, 56 is

a. 69.5 b. 72
c. 64 d. 61.5

Answer Key

1 c	2 b	3 b
4 c	5 b	6 b
7 b	8 c	9 b
10 c	11 c	12 b
13 c	14 a	15 c
16 d	17 c	18 b
19 d	20 c	21 b
22 a	23 a	24 c
25 d	26 c	

Mode, GM, HM

Past Year Questions

PYQ Nov. 19

(1) Find the mode of the following data:

Class	3-6	6-9	9-12	12-15	15-18	18-21
Freq.	2	5	10	23	21	12

a. 25 b. 4.6
c. 14.6 d. 13.5

PYQ Nov. 19

(2) Histogram is used to represent

a. Mode b. Median
c. Percentile d. Quartile

PYQ Nov. 19

(3) Find the mode of the following:

0-10	10-20	20-30	30-40	40-50	50-60
7	14	22	34	20	19

a. 32 b. 34.61
c. 25.42 d. 35

PYQ Jan. 21

(4) ☆ From the record on sizes of shoes sold in a shop, one can compute the following to determine the most preferred shoe size.

a. Mean b. Median
c. Mode d. Range

PYQ Jan. 21

(5) If $y = 3 + (4.5)x$ and the mode for x – value is 20, then the mode for y – value is

a. 3.225 b. 12
c. 24.5 d. 93

PYQ July 21

(6) If $y = 3 + 1.9x$, and mode of x is 15, then the mode of y is:

a. 15.9 b. 27.8
c. 35.7 d. 31.5

PYQ Dec. 21

(7) ☆ One hundred participants expressed their opinion on recommending a new product to their friends using the attributes : most unlikely, not sure, likely, most likely. The appropriate measure of central tendency that can be used here is

a. Mean
b. Mode
c. Geometric mean
d. Harmonic mean

PYQ Nov. 18

(8) The Geometric mean of 3, 6, 24 and 48 is

a. 8 b. 12
c. 24 d. 6

PYQ July 21

(9) ☆ Expenditures of a company (in million rupees) per item in various years

Year	Item of expenditures				
	Salary	Fuel & Trans.	Bonus	Int. on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	108	3.84	41.6	74
2001	336	133	3.68	36.4	88

2002	420	142	3.96	49.4	98

What is the average amount of interest per year which the company had to pay during this period?

a. 33.66 b. 36.66
c. 31.66 d. 39.66

PYQ Dec. 21

(10) If two variables a and b are related by $c = ab$ then G.M. of c is equal to

a. G.M of a + G.M. of b
b. G.M. of a × G.M. of b
c. G.M. of a – G.M. of b
d. G.M. of a / G.M. of b

PYQ Nov. 20

(11) ☆ Given the weights for the numbers 1, 2, 3 .....n are respectively $1^2, 2^2, 3^2 \ldots\ldots n^2$ then weighted HM is_____

a. $\frac{2n+1}{4}$
b. $\frac{2n+1}{6}$
c. $\frac{2n+1}{3}$
d. $\frac{2n+1}{2}$

PYQ Nov. 20

(12 ☆ The harmonic mean A and B is 1/3 and harmonic mean of C and D is 1/5. The harmonic mean of ABCD is

a. 8/15 b. 1/4
c. 1/15 d. 5/3

PYQ Nov. 20

(13) A fire engine rushes to a place of fire accident with a speed of 110 kmph and after the completion of operation returned to the base at a speed of 35 kmph. The average speed per hour in per-direction is obtained as _____ speeds.

a. Average of
b. H M of
c. G M of
d. Half of HM of

PYQ Jan. 21

(14) If there are two groups with n_1 and n_2 observations and H_1 and H_2 are respective harmonic means, then the harmonic mean of combined observation is

a. $\frac{n_1H_1 + n_2H_2}{n_1 + n_2}$
b. $\frac{n_1H_1 + n_2H_2}{H_1 + H_2}$
c. $\frac{n_1 + n_2}{n_1H_1 + n_2H_2}$
d. $\frac{(n_1 + n_2)H_1H_2}{n_1H_2 + n_2H_1}$

PYQ Jun 23

(15 Find the mode of the following data:

X	F(x)
25-30	20
30-35	53
35-40	42
40-45	42
45-50	41
50-55	43

a. 31.75 b. 30.75
c. 33.75 d. 35.75

PYQ Jun 23

(16) The Geometric Mean of 3, 7, 11, 15, 24, 28, 30, 0 is

a. 6 b. 0
c. 9 d. 12

Answer Key

1 c	2 a	3 b
4 c	5 d	6 d
7 b	8 b	9 b
10 b	11 c	12 b
13 b	14 d	15 c
16 b		

Mode, GM, HM

Mock Test Paper Questions

MTP May 19

(1) If x and y are related by $x–y–10 = 0$ and mode of x is known to be 23, then the mode of y is

a. 20 b. 13
c. 3 d. 23

MTP Oct 21

(2) If x and y are related by $x–y–10 = 0$ and mode of x is known to be 23, then the mode of y is

a. 20 b. 13
c. 3 d. 23

MTP Nov 18

(3) The Geometric mean of the series $1, k, k^2, k^3, \ldots, k^n$ where k is constant is

☆ a. $k^{\frac{(n+1)}{2}}$ b. $k^{n+0.5}$

c. k^{n+1} d. k^{n+2}

MTP March 21

(4) G.M is a better measure than others when,

☆ a. Ratios and percentages given

b. Interval of scale is given

c. Both (a) and (b)

d. Either (a) or (b)

MTP March 22

(5) If two variables a and b are related by c= ab then GM. of c =

a. GM of a + GM of b

b. GM of a × GM of b

c. GM of a - GM of b

d. GM of a /GM of b

MTP June 22

(6) Geometric Mean of 8,4, 2 is

a. 4 b. 2

c. 8 d. none of these

MTP Dec 22 – Series I

(7) The geometric mean of three numbers 40, 50, and x is 10, and the value of x is

☆ a. 5 b. 4

c. 2 d. $\frac{1}{2}$

MTP May 18

(8) A man travels from Delhi to Agra at an average speed of 30km per hour and back at an average speed of 60 km per hour. What's the average Speed.

a. 48 km/hr b. 40 km/hr

c. 45 km/hr d. 35 km/hr

MTP Nov 19

(9) A person travels from A to B at the rate of 20 km/hr. and from B to A at the rate of 30km/hr. What is the average rate of whole journey?

a. 30 km/ hr. b. 24 km/hr.

c. 35 km/hr. d. None of these

MTP Nov 20

(10) If there are two groups with 75 and 65 as harmonic means containing 15 and 13 observation, then combined HM is given by

a. 70 b. 72.25

c. 78 d. 76

MTP March 21

(11) A man travels at a speed of 20km/hr and then returns at a speed of 30 km/ hr. His average speed of the whole journey is:

a. 25km/hr b. 24.5km/hr

c. 24km/hr d. None

MTP March 21

(12) If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observations. Then the combined H.M. is given by:

a. 70 b. 80

c. 70.35 d. 69.48

MTP Oct 21

(13) If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observations, then the combined HM is given by

a. 65 b. 70.36

c. 70 d. 71

MTP Dec 22 – Series I

(14) A train covered the first 5 km of its journey at a speed of 30km/hr. and the next 15 km at a speed of

☆ 45 km/hr. The average speed of the train was:

a. 38 km/hr. b. 40 km/hr.

c. 36 km/hr. d. 42 km/hr.

MTP June 2023 Series I

(15) Mode is:

a. Least frequent value

b. Middle Most value

c. Most frequent Value

d. None of these

MTP June 2023 Series II

(16) A shopkeeper wants to place an order for t-shirts with the wholesaler based on past sales data. The size he orders will be decided looking at the _____ of past sales data?

a. Mean

b. Median

c. Mode

d. None of the above

Answer Key

1 b	2 b	3 a
4 a	5 b	6 a
7 d	8 b	9 b
10 a	11 c	12 a
13 c	14 b	15 c
16 c		

Other Central Tendency Problems

Past Exam Questions

PYQ May 18

(1) Relation between mean, median and mode is
a. mean-mode = 2 (mean-median)
b. mean-median = 3 (mean-mode)
c. mean-median = 2 (mean-mode)
d. mean-mode = 3 (mean-median)

PYQ Nov. 18

(2) If in a moderately skewed distribution, the values of mode and mean are 32.1 and 35.4 respectively, then the value of the median is
a. 34.3 b. 33.3
c. 34 d. 33

PYQ June 19

(3) In a moderately skewed distribution the values of mean & median are 12 & 8 respectively. The value of mode is
a. 0 b. 12
c. 15 d. 30

PYQ June 19

(4) For a symmetric distribution
a. Mean = Median = Mode
b. Mode = 3 Median = 2 Mean
c. Mode = $\frac{1}{3}$ Median = $\frac{1}{2}$ Mean
d. None of these

PYQ Nov. 19

(5) If the AM & GM of two numbers are 30 and 24 respectively. Find the no's.
a. 12 and 24 b. 48 and 12
c. 30 and 20 d. 40 and 20

PYQ Nov. 20

(6) If the AM and HM of two numbers are 6 and 9 respectively, then GM is
a. 7.35 b. 8.5
c. 6.75 d. None of these

PYQ Dec. 21

(7) If the AM and GM for 10 observations are both 15, then the value of HM is
a. Less than 15
b. More than 15
c. 15
d. Cannot be determined

PYQ Dec. 21

(8) ☆ For a moderately skewed distribution the median is twice the mean, then the mode is _____ times the median.
a. 3 b. 2
c. 2/3 d. 3/2

PYQ Dec. 21

(9) Given that mean = 70.20 and mode = 70.50, the Median is expected to be.
a. 70.15 b. 70.20
c. 70.30 d. 70.35

PYQ Dec 22

(10) If mean $(\bar{X})$ is = 10 and mode (Z) is = 7, then find out the value of median (M)?
a. 9 b. 17
c. 3 d. 4.33

PYQ Dec 22

(11) If Arithmetic Mean and Geometric Mean between two numbers are 5 and 4 respectively, then these numbers are:
a. 2 & 3 b. 2 & 8
c. 4 & 6 d. 1 & 16

PYQ Dec 22

(12) If Arithmetic mean between two numbers is 5 and Geometric mean is 4 then what is the value of Harmonic mean?
a. 3.2 b. 3.4
c. 3.5 d. 3.6

PYQ Jun 23

(13) For a moderately skewed distribution of marks in statistics for a group of 200 students, the mean marks and median marks were found to be 55.60 and 52.40, respectively. What are the modal marks?
a. 54.43 b. 48
c. 53.56 d. 46

PYQ Jun 23

(14) If the mean of two numbers is 30 and geometric mean is 24, then what will be the Harmonic mean of two numbers?
a. 19.2 b. 21.8
c. 22.3 d. 18.4

Answer Key

1 d	2 a	3 a
4 a	5 b	6 a
7 c	8 b	9 c
10 a	11 b	12 a
13 d	14 a	

Other Central Tendency Problems

Mock Test Paper Questions

MTP May 18

(1) If the arithmetic mean between two numbers is 64 and the Geometric Mean between them is 16 . The Harmonic mean between them is ___

a. 64 b. 4
c. 16 d. 40

MTP May 18

(2) When the mean is 3.57 and mode is 2.13, then the value of median is ___

a. 3.09 b. 5.01
c. 5.01 d. none of these

MTP Nov 18

(3) The relationship between Mean, Median and Mode

a. Mean-Mode = 3(Mean-Median)
b. Mode = 2 Median – 3 Median
c. Median- Mode = 3 (Median-mean)
d. none of these

MTP Nov 18

(4) Relationship between AM, GM, and HM

a. GM ≥AM≥ HM
b. AM ≥GM≥ HM
c. HM ≥AM≥ GM
d. none of these

MTP May 19

(5) For a moderately skewed distribution, which of the following relationship holds?

a. Mean – Mode = 3 (Mean – Median)
b. Median – Mode = 3 (Mean – Median)
c. Mean – Median = 3 (Mean – Mode)
d. Mean – Median = 3 (Median – Mode)

MTP May 19

(6) Which of the following results hold for a set of distinct positive observations?

a. AM ≥ GM ≥ HM
b. HM ≥ GM ≥ AM
c. AM > GM > HM
d. GM > AM > HM

MTP May 19 Series II

(7) For a moderately skewed distribution, which of the following relationship holds?

a. Mean – Mode = 3 (Mean – Median)
b. Median – Mode = 3 (Mean – Median)
c. Mean – Median = 3 (Mean – Mode)
d. Mean – Median = 3 (Median – Mode)

MTP May 20

(8) For a moderately skewed distribution, which of the following relationship holds?

a. Mean – Mode = 3 (Mean – Median)
b. Median – Mode = 3 (Mean – Median)
c. Median – Mode = 3 (Mean – Median)
d. Mean – Median = 3 (Median – Mode)

MTP March 21

(9) If the A.M. and H.M. for two numbers are 5 and 3.2 respectively then the G.M. will be:

a. 4.05 b. 16
c. 4 d. 4.10

MTP Apr 21

(10) Which of the following statements is true?

a. Usually mean is the best measure of central tendency.
b. Usually median is the best measure of central tendency.
c. Usually mode is the best measure of central tendency.
d. Normally, GM is the best measure of central tendency

MTP Apr 21

(11) When mean is 3.57 and mode is 2.13 then the value of the median is

a. 3.09 b. 5.01
c. 4.01 d. None of these

MTP Apr 21

(12) The A.M and H.M for two numbers are 5 and 3.2 respectively then the G.M will be

a. 4.05 b. 16
c. 4 d. 4.10

MTP Nov 21

(13) Which of the following is not a criteria for ideal measure of central tendency?

a. It should be ambiguously defined
b. It should be simple to compute
c. It should be based on all the observations
d. None of these

MTP Nov 21

(14) ☆ If the rates return from three different shares are 100%, 200% and 400% respectively. The average rate of return will be.

a. 350% b. 233.33%
c. 200% d. 300%

MTP Nov 21

(15) Find the two numbers if AM and GM is 10 and 6 respectively.

a. 6, 6 b. 12, 8
c. 9, 4 d. 18, 2

MTP March 22

(16) For a moderately skewed distribution, the median is twice the mean , then the mode is ____ times the median.

a. 3 b. 2
c. 2/3 d. 3/2

MTP March 22

(17) If the Arithmetic mean between two numbers is 64 and the Geometric mean between them is 16. The Harmonic Mean between them is _____.

a. 64 b. 4
c. 16 d. 40

MTP June 22

(18) When mean is 3.57 and mode is 2.13 then the value of median is

a. 3.09 b. 5.01
c. 4.01 d. None of these

MTP June 22

(19) If the difference between mean and mode is 33, then the difference between Mean and Median will be ____

☆

a. 63 b. 31.5
c. 11 d. None of these

MTP Dec 22 – Series I

(20) If the difference between Mean and Mode is 69, then the difference between Mean and Median will be _____

☆

a. 63 b. 31.5
c. 23 d. None of these

MTP Dec 22 Series II

(21) In a moderately skewed distribution the values of mean and median are 12 and 8 respectively. The value of mode is:

a. 0 b. 12
c. 15 d. 30

MTP Dec 22 Series II

(22) For a symmetric distribution:

a. Mean = Median = Mode
b. Mode = 3 Median – 2 Mean
c. Mode = 1/3 Median = 1/2 Mean
d. None

MTP June 2023 Series I

(23) If mean ($\bar{x}$) is = 10 and mode (Z) is = 7, then find out the value of median (M)

a. 9
b. 17
c. 3
d. 4.33

MTP June 2023 Series I

(24) If Arithmetic mean between two numbers is 5 and Geometric mean is 4 then what is the value of Harmonic mean?

a. 3.2
b. 3.4
c. 3.5
d. 3.6

MTP June 2023 Series II

(25) AM and GM are both negative values, HM is equal to:

a. $H = \frac{G}{A^2}$
b. $H = \frac{G^2}{A}$
c. $H = \frac{G^2}{\sqrt{A}}$
d. None

MTP June 2023 Series II

(26) Which of the following is the correct relation between mean, median and mode

a. $\text{Median} = \text{mode} + \frac{2}{3}(\text{mean} - \text{mode})$
b. $2\text{Mean} = \text{Mode} - 3\text{Median}$
c. $2\text{Mean} = \text{Mode} + 3\text{Medain}$
d. $\text{Mode} = 3\text{Medain} + 2\text{Mean}$

Answer Key

1 b	2 a	3 a
4 b	5 a	6 c
7 a	8 a	9 c
10 a	11 a	12 c
13 a	14 c	15 d
16 b	17 b	18 a
19 c	20 c	21 a
22 a	23 a	24 a
25 a	26 a	

Range

Past Exam Questions

PYQ Nov. 18

(1) If the range of a set of values is 65 and maximum value in the set is 83, then the minimum value in the set is

a. 74 b. 9
c. 18 d. None of these

PYQ Nov. 19

(2) Difference between upper limit and lower limit of a class is known as.

a. Range
b. Class mark
c. Class size
d. Class boundary

PYQ Jan. 21

(3) The relationship between P-series and Q- series is given by $2P-3Q-10=0$. If the range of P-series is 18. What would be the range of Q?

a. 10 b. 15
c. 9 d. 12

PYQ July 21

(4) If the relationship between x and y is given by $2x + 3y = 10$ and the range of y is 10, then what is the range of x?

a. 10 b. 18
c. 8 d. 15

PYQ Dec. 21

(5) The marks secured by 5 students in a subject are 82, 73, 69, 84, 66. What is the coefficient of Range

a. 0.12 b. 12
c. 120 d. 0.012

Answer Key

1 c 2 c 3 d
4 d 5 b

Range

Mock Test Paper Questions

MTP May 18

(1) If the range of x is 2, what would be the range of $-3x + 50$?

a. 2 b. 6
c. -6 d. 44

MTP May 19

(2) The range of 15, 12, 10, 9, 17, 20 is

a. 5 b. 12
c. 13 d. 11

MTP May 19 Series II

(3) The range of 15, 12, 10, 9, 17, 30 is

a. 5 b. 12
c. 13 d. 21

MTP May 19 Series II

(4) If the range of x is 2, what would be the range of $-3x+50$?

a. 2 b. 6
c. -6 d. 44

MTP May 20

(5) If Rx and Ry denote ranges of x and y respectively where x and y are related by $3x+2y+10=0$, what would be the relation between x and y?

a. $Rx = Ry$ b. $2\,Rx = 3\,Ry$
c. $3\,Rx = 2\,Ry$ d. $Rx = 2\,Ry$

MTP Nov 20

(6) The range of 28, 22, 40, 20, 15, 50 is

a. 40 b. 22
c. 35 d. None of these

MTP Mar 21, MTP Apr 21

(7) What is the coefficient of range for the following distribution?

Class	10-19	20-29	30-39	40-49	50-59
Freq.	11	25	16	7	3

a. 22 b. 50
c. 75.82 d. 72.46

MTP June 2023 Series II

(8) Which of the following is a correct statement?

a. Range is unaffected by the change in origin or change in scale
b. Range is affected by the change in origin or change in scale
c. Range is unaffected by the change in origin but affected by change in scale
d. Range is affected by the change in origin but unaffected by change in scale

Answer Key

1 b 2 d 3 d
4 b 5 c 6 c
7 d 8 c

Mean Deviation

Past Exam Questions

PYQ Nov. 20

(1) Which of the following measure of dispersion is based on absolute deviations?
a. Range
b. S. D
c. Mean deviation
d. Quartile deviation

PYQ Jan. 21

(2) Find the coefficient of mean deviation about mean for the data: 5, 7, 8, 10, 11, 13, 19
a. 17.28 b. 28.57
c. 32.11 d. 18.56

PYQ July 21

(3) If a school has 14 teachers, their heights (in cm) are:
172, 173, 164, 178, 168, 169, 173, 172, 173, 164, 178, 168, 169, 173
then average deviation of this data is:
a. 2.43 approx. b. 3.93 approx.
c. 3.43 approx. d. 2.92 approx.

PYQ July 21

(4) The probable value of mean deviation when $Q_3 = 40$ and $Q_1 = 15$ is:
☆ a. 15 b. 18.75
c. 17.50 d. 0

PYQ July 21

(5) If every observation is increased by 7 then:
a. Standard deviation increased by 7
b. Mean deviation increased by 7
c. Not affected at all
d. Quartile deviation increased by 7.

PYQ July 21

(6) The mean deviation of the numbers 3, 10, 6, 11, 14, 17, 9, 8, 12 about the mean is (correct to one decimal place):
a. 8.7 b. 4.2
c. 3.1 d. 9.8

PYQ June 22

(7) Mean Deviation of data 3, 10, 10, 4, 7, 18, 5 from mode is
a. 4.39 b. 4.70
c. 4.14 d. 5.24

PYQ June 22

(8) Which of the following is based on absolute deviation?
a. Standard deviation
b. Mean deviation
c. Range
d. Quartile deviation

PYQ June 23

(9) If x and y are related as $4x+3y+11=0$ and mean deviation of y is 7.20, what is the mean deviation of x?
a. 2.7
b. 7.2
c. 4.5
d. 5.4

PYQ June 23

(10) The mean deviation about the mean for the data 12, 16, 24, 30, 35, 39, 40 is
a. 9.14
b. 9.41
c. 8.91
d. 9.81

Answer Key

1 c	2 c	3 c
4 a	5 c	6 c
7 c	8 b	9 d
10 a		

Mean Deviation

Mock Test Paper Questions

MTP Nov 18

(1) The MD about the Mean for the data 6,9,11,10,12,12
a. 1.47 b. 1.57
c. 1.67 d. 1.87

MTP Nov 20

(2) The mean deviation about Mode for the numbers 4/11, 6/11, 8/11, 9/11, 12/11, 8/11 is
a. 9/15 b. 12
c. 6/11 d. 1/6

MTP Nov 20

(3) If the relation between x and y is $5y - 3x = 10$ and the mean deviation about mean for x is 12, then the mean deviation of y about mean is
a. 9.20 b. 6.80
c. 7.20 d. 15.80

MTP March 21

(4) If two variables x and y are related by $2x + 3y - 7 = 0$ and the mean and mean deviation about mean of x are 1 and 0.3 respectively, then the co-efficient of mean deviation of y about mean is:

☆ a. -5 b. 4
c. 12 d. 50

MTP March 21

(5) The equation of a line is $5x + 2y = 17$. Mean deviation of y about mean is 5. Calculate mean deviation of x about mean.

a. -2 b. 2
c. -4 d. None

MTP March 22

(6) The deviations are minimum when taken from
a. Mean b. Median
c. Mode d. GM

MTP June 22

(7) The sum of squares of the deviations of the given values from their .....is minimum.
a. Arithmetic Mean
b. Median
c. Mode
d. None of these

MTP Dec 22 – Series I

(8) Which measure of dispersion is based on the absolute deviation only?
a. Range
b. Standard Deviation
c. Mean Deviation
d. Quartile Deviation

MTP March 21

(9) Find the mean deviation about mean for the numbers: 2, 6, 7, 4, 8, 3
a. 4 b. 6
c. 5 d. 2

Answer Key

1 c	2 d	3 c
4 c	5 b	6 b
7 a	8 c	9 d

Standard Deviation

Past Exam Questions

PYQ May 18

(1) If the S.D. of the 1st n natural numbers is $\sqrt{30}$ then the value of n is
a. 19 b. 20
c. 21 d. None of these

PYQ Nov. 18

(2) If the variance of 5, 7, 9 and 11 is 4, then the coefficient of variation is:
☆ a. 15 b. 25
c. 17 d. 19

PYQ Nov. 18

(3) Standard Deviation for the marks obtained by a student in monthly test in mathematic (out of 50) as 30, 35, 25, 20, 15 is
a. 25 b. $\sqrt{50}$
c. $\sqrt{30}$ d. 50

PYQ Nov. 18

(4) If the standard deviation for the marks obtained by a student in monthly test is 36, then the
☆ variance is
a. 6 b. 36
c. 1296 d. None of these

PYQ June 19

(5) If $\sigma^2 = 100$ and coefficient of variation = 20% then $\bar{x}$ =
a. 60 b. 70
c. 80 d. 50

PYQ June 19

(6) S.D of first five consecutive natural numbers is
a. $\sqrt{10}$ b. $\sqrt{8}$
c. $\sqrt{3}$ d. $\sqrt{2}$

PYQ June 19

(7) If the profits of a company remain some for the last ten months then the S.D. of profits of the company would be:
a. Positive b. Negative
c. Zero d. (a) or (c)

PYQ June 19

(8) The sum of mean and SD of a series is a + b, if we add 2 to each observation of the series then the sum of mean and SD is
a. $a + b + 2$ b. $6 - a + b$
c. $4 + a - b$ d. $a + b + 4$

PYQ Nov. 19

(9) Origin is shifted by 5, what will happen
a. SD will increase by 5
b. QD will increase by 5
c. MD will increase by 5
d. There will be no change in SD

PYQ Nov. 19

(10) Coefficient of variation is equal to:
a. $\frac{SD}{Mean}$
b. $\frac{SD}{Mean} \times 100$
c. $\frac{Mean}{SD} \times 100$
d. $\frac{Mean}{SD}$

PYQ Nov. 19

(11) Find SD of the following
1, 2, 3, 4, 5, 6, 7, 8, 9.
☆ a. 2.58 b. 60/9
c. 60/3 d. 3.20

PYQ Nov. 19

(12) If mean = 200 and variance = 80. Find coefficient of variation.
a. 2.56 b. 4.47
c. 32 d. 0.32

PYQ Nov. 19

(13) Which of the following is affected by shifting of scale.
a. SD b. MD
c. QD d. All of these

PYQ Nov. 19

(14) Coefficient of variation is 80. Mean is 20. Find variance:
a. 640 b. 256
c. 16 d. 250

PYQ Nov. 19

(15) SD from numbers 1, 4, 5, 7, 8 is 2.45. If 10 is added to each then SD will be:
a. 12.45
b. 24.5
c. 12
d. Will not change

PYQ Jan. 21

(16) The best statistical measure used for comparing two series is
a. Mean absolute deviation
b. Range
c. Coefficient of variation
d. Standard deviation

PYQ Jan. 21

(17) It is given that the mean $(\bar{X})$ is 10 and standard deviation (s.d.) is 3.2. If the observations are increased by 4, then the new mean and standard deviations are:
a. $\bar{X} = 10, s.d. = 7.2$
b. $\bar{X} = 10, s.d. = 3.2$
c. $\bar{X} = 14, s.d. = 3.2$
d. $\bar{X} = 14, s.d. = 7.2$

PYQ July 21

(18) The SD of 1 to 9 natural number is:
a. 6.65 b. 2.58
c. 6.75 d. 5.62

PYQ July 21

(19) If the numbers are 5, 1, 8, 7, 2 then the coefficient of variation is:
a. 56.13% b. 59.13%
c. 48.13% d. 44.13%

PYQ June 22

(20) A M and Coefficient of variation of x is 10 and 40. What is the variance $30 - 2x$
a. 64 b. 56
c. 49 d. 81

PYQ June 22

(21) Following are the wages of 8 workers 82, 96, 52, 75, 70, 65, 50, 70. Find range and coefficient of range?
a. 46, 32.70 b. 43, 31.50
c. 46, 31.50 d. 43, 32.70

PYQ June 22

(22) Find the standard deviation and coefficient of variation for.
1, 9, 8, 5, 7
a. 2.828, 49.32 b. 2.828, 48.13
c. 2.828, 47.13 d. 2.828, 50.13

PYQ Dec 22

(23) If the coefficient of variation and standard deviation are 30 and 12 respectively, then the arithmetic mean of the distribution is:
a. 40 b. 36
c. 25 d. 19

PYQ Dec 22

(24) If the sum of square of the values equals to 3390, Number of observations are 30 and Standard deviation is 7, what is the mean value of the above observations?

a. 14 b. 11
c. 8 d. 5

PYQ Dec 22

(25) If the variance of random variable 'x' is 17, then what is variance of $y = 2x + 5$?

a. 34 b. 39
c. 68 d. 78

PYQ Dec 22

(26) If the variance of given data is 12, and their mean value is 40, what is coefficient of variation (CV)?

a. 5.66% b. 6.66%
c. 7.50% d. 8.65%

PYQ Dec 22

(27) In a given set if all data are of same value then variance would be:

a. 0 b. 1
c. - 1 d. 0.5

PYQ Jun 23

(28) If the Standard Deviation of data 2, 4, 5, 6, 8, 17 is 4.47, then Standard Deviation of the data 4, 8, 10, 12, 16, 34 is

a. 4.47 b. 8.94
c. 13.41 d. 2.24

PYQ Jun 23

(29) The mean and variance of a group of 100 observations are 8 and 9, respectively. Out of 100 observations, the mean and standard deviation of 60 observations are 10 and 2 respectively. Find the variance of remaining 40 observations?

a. 4.5 b. 3.5
c. 2.5 d. 1.5

Answer Key

1 a	2 b	3 b
4 c	5 d	6 d
7 c	8 a	9 d
10 b	11 a	12 b
13 d	14 b	15 d
16 c	17 c	18 b
19 b	20 a	21 c
22 c	23 a	24 c
25 c	26 d	27 b
28 b	29 d	

Standard Deviation

Mock Test Paper Questions

MTP May 18

(1) The standard deviation of 25, 32, 43, 53, 62, 59, 48, 31, 24, 33 is

a. 13.23 b. 12.33
c. 11.33 d. None of these

MTP May 18

(2) The SD is independent of change of

a. Origin b. Scale
c. Both (a) & (b) d. None of these

MTP May 18

(3) If the mean of frequency distribution is 100 and coefficient of variation is 45% then standard deviation is

a. 45 b. 0.45
c. 4.5 d. 450

MTP May 18

(4) if the mean and SD of X are a and b respectively, then the S.D of $\frac{x-a}{b}$ is

a. a/b b. -1
c. 1 d. ab

MTP Nov 18

(5) Coefficient of Variation (CV) is calculated

a. $\frac{SD}{AM} \times 100$ b. $\frac{AM}{SD} \times 100$
c. $\frac{AM}{MD} \times 100$ d. None of these

MTP Nov 18

(6) The SD for the data 6, 9, 10, 3, 7 is

a. 2.35 b. 2.45
c. 2.55 d. 2.65

MTP May 19

(7) The standard deviation of, 10, 16, 10, 16, 10, 10, 16, 16 is

a. 4 b. 6
c. 3 d. 0

MTP May 19

(8) If all the observations are multiplied by 2, then

a. New SD would be also multiplied by 2
b. New SD would be half of the previous SD
c. New SD would be increased by 2
d. New SD would be decreased by 2

MTP May 19 Series II

(9) If the profits of a company remain the same for the last ten months, then the standard deviation of profits for these ten months would be?

a. positive
b. negative
c. zero
d. A or C

MTP May 19 Series II

(10) If x and y are related by 2x+3y+4 = 0 and SD of x is 6, then SD of y is

a. 22 b. 4
c. 40 d. 9

ICAI SM, MTP May 19 Series II

(11) If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation of y is

a. 25 b. 30
c. 40 d. 20

MTP Nov 19

(12) If the SD of x is 3, what us the variance of (5–2x)?

a. 36 b. 6
c. 1 d. 9

MTP Nov 19

(13) If the values of all observations are equal then the Standard Deviation of the given observations is

a. 0 b. 2
c. 1 d. None of these

MTP Nov 19

(14) The Standard Deviation of a set of 50 items is 10. Find the Standard Deviation if every item is increased by 5

a. 15 b. 5
c. 10 d. None of these

MTP Nov 19

(15) Find the coefficient of variation if the sum of squared deviations taken from mean 40 of 10 observations is 360.

a. 15 b. 20
c. 40 d. None of these

MTP May 20

(16) If x and y are related by 2x+3y+4 = 0 and SD of x is 9, then SD of y is

a. 22 b. 6
c. 5 d. 24

MTP May 20

(17) If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation of y is

a. 25 b. 30
c. 40 d. 20

MTP Nov 20

(18) What is the coefficient of variation of the following numbers 53, 52, 61, 60, 64

a. 18.09 b. 8.09
c. 12.23 d. 15.45

MTP Nov 20

(19) The mean and SD for a, b, and 2 are 3 and 1 respectively, the value of ab would be

☆ a. 11.5 b. 5
c. 12 d. 13

MTP March 21

(20) If X and Y are two random variables then v(x+y), when x is independent of y

a. $v(x) + v(y)$
b. $v(x) + v(y) - 2\,v(x,y)$
c. $v(x) + v(y) + 2\,v(x,y)$
d. $v(x) - v(y)$

Note: From Probability Chapter

MTP March 21

(21) The sum of squares of deviation from mean of 10 observations is 250. Mean of the data is 10. Find the coefficient of variation

☆ a. 10% b. 25%
c. 50% d. 0%

MTP March 21

(22) If variance of is x is 5, then find the variance of (2- 3x)

☆ a. 10 b. 45
c. 5 d. -13

MTP March 21

(23) What is the standard deviation of number recoveries among 48 patients when the probability of recovering is 0.75?

a. 36 b. 81
c. 9 d. 3

Note: Theoretical Distribution Chapter

MTP Apr 21

(24) The standard deviation of 10, 16, 10, 16, 10, 10, 16, 16 is

a. 4 b. 6
c. 3 d. 0

MTP Apr 21

(25) The variance of the data 3, 4 ,5, 8 is
a. 4.5 b. 3.5
c. 5.5 d. 6.5

MTP Apr 21

(26) If the profits of a company remains the same for the last ten months, then the standard deviation of profits for these ten months would be ?
a. Positive b. Negative
c. Zero d. A or C

MTP Apr 21

(27) Which measure of dispersion is based on all the observations?
a. Mean Deviation
b. Standard Deviation
c. Quartile Deviation
d. A and B but not C

MTP Apr 21

(28) The Sum of the squares of the deviations from mean of 10 observations is 250. Mean of the data is 10. Find coefficient of variation.
a. 10% b. 25%
c. 50% d. 0%

MTP Apr 21

(29) The Standard Deviation of a variable x is known to be 10. The Standard deviation of 50+5x
a. 50 b. 100
c. 10 d. 500

ICAI SM, MTP Apr 21

(30) The of mean and SD of a series is a + b, if we add 2 to each observation of the series then the sum of the mean and SD is
a. a+b+2 b. 6-a+b
c. 4+a-b d. a+b+4

MTP Nov 21

(31) The Standard deviation is independent of change of
a. Scale b. Origin
c. Both (a) and (b) d. None of these

MTP Nov 21

(32) If all the observations are decreased by 4, find the relation between new SD and old SD.
a. New SD = Old SD/2
b. New SD = Old SD - 2
c. New SD = Old SD - 4
d. Remains unchanged

MTP Nov 21

(33) Standard deviation of first n natural number is 2. What is the value of n?
a. 7 b. 6
c. 5 d. 8

MTP Nov 21

(34) Find the variance of 3x+2 if standard deviation of x is 4
a. 9 b. 160
c. 16 d. 144

MTP Nov 21

(35) If the variance of x = 148.6 and mean of x = 40 , then the coefficient of variation is
a. 37.15 b. 30.48
c. 33.75 d. None of these

MTP Oct 21

(36) If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10 respec., then the coefficient of variation of y is
a. 25 b. 30
c. 40 d. 20

MTP March 22

(37) If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10 resp., then the coefficient of variation of y is
a. 25 b. 30
c. 40 d. 20

MTP June 22

(38) SD of first five consecutive natural numbers is:
a. $\sqrt{10}$ b. $\sqrt{8}$
c. $\sqrt{3}$ d. $\sqrt{2}$

MTP June 22

(39) If the profit of a company remains same for the last 10 months then the SD of profit of the company would be:
a. Positive b. Negative
c. Zero d. either (a) or (c

MTP June 22

(40) The Standard deviation of a variable x is to be 10. The Standard deviation of 50+5x is
a. 50 b. 100
c. 10 d. 500

MTP June 22

(41) If mean and coefficient of variation of the marks of n students is 20 and 80 respectively. What will be ☆ variance of them
a. 256 b. 16
c. 25 d. None of these

MTP Dec 22 – Series I

(42) If the standard deviation of 1, 2, 3, 4, ... 10 is σ, then the SD of 11, 12, 13, 14, .., 20 is:

☆ a. 10σ b. $10+\sigma$
c. σ d. None of these

MTP Dec 22 – Series I

(43) What is the SD of the following series :

Meas.	0-10	10-20	20-30	30-40
Freq.	1	3	4	2

☆
a. 81 b. 7.6
c. 9 d. 2.26

MTP Dec 22 – Series I

(44) If all observations in a distribution are increased by 6, then the variance of the series will be ___
a. Increased b. Decreased
c. Unchanged d. None of these

MTP Dec 22 – Series I

(45) The arithmetic mean and coefficient of variation of data set x are respectively 10 and 30. The variance of 30-2x is
a. 28 b. 32
c. 34 d. 36

MTP Dec 22 – Series I

(46) If $2x + 3y + 4 = 0$ and $v(x) = 6$ then $v(y)$ is:
a. $\frac{8}{3}$ b. 9
c. -9 d. 6

MTP Dec 22 Series II

(47) SD of first five consecutive natural numbers is:
a. $\sqrt{10}$ b. $\sqrt{8}$
c. $\sqrt{3}$ d. $\sqrt{2}$

MTP Dec 22 Series II

(48) If the profit of a company remain same for the last 10 months then the SD of profit of the company would be:
a. Positive b. Negative
c. Zero d. Either A or C

MTP Dec 22 Series II

(49) The sum of mean and SD of a series is $a + b$, if we add 2 to each observation of the series then the sum of mean and SD is :
a. $a + b + 2$ b. $6 - a + b$
c. $4 + a - b$ d. $a + b + 4$

MTP June 2023 Series I

(50) If the coefficient of variation and standard deviation are 60 and 12 respectively, then the arithmetic mean of the distribution is
a. 40 b. 36
c. 20 d. 19

MTP June 2023 Series I

(51) If the sum of square of the value equals to 3390, Number of observation are 30 and Standard deviation is 7, what is the mean value of the above observation?
a. 14 b. 11
c. 8 d. 5

MTP June 2023 Series I

(52) If the variance of random variable 'x' is 18, then what is variance of $y = 2x + 5$?
a. 34 b. 39
c. 68 d. 72

MTP June 2023 Series I

(53) If the variance of given data is 12, and their mean value is 40, what is coefficient of variation (CV)?
a. 5.66% b. 6.66%
c. 7.50% d. 8.65%

MTP June 2023 Series I

(54) In a given set if all data are of same value then variance would be:
a. 0 b. 1
c. - 1 d. 0.5

MTP June 2023 Series II

(55) There are two startups in ecommerce sector struggling to acquire the market. Following data is for Mean and Standard Deviation of billing amount of bought items per month on their website.

Startup	A	B
No. of customers/ month	40	30
Mean billing amount	₹ 2,500	₹ 2,200
SD of billing amount	₹ 10	₹ 11

Which startup has a better consistency when it comes to sales numbers?
a. Startup A
b. Startup B
c. Both A and B
d. Need more information

MTP June 2023 Series II

(56) Which of the following is the best measure to calculate the volatility of stock market?
a. Covariance
b. Standard Deviation
c. Variance
d. All of the above

Answer Key

1	a	2	a	3	a
4	c	5	a	6	b
7	c	8	a	9	c
10	b	11	c	12	a
13	a	14	c	15	a
16	b	17	c	18	b
19	a	20	a	21	c
22	b	23	d	24	c
25	b	26	c	27	d
28	c	29	a	30	a
31	b	32	d	33	a
34	d	35	b	36	c
37	c	38	d	39	c
40	a	41	a	42	c
43	c	44	c	45	d
46	a	47	d	48	c
49	a	50	c	51	c
52	b	53	d	54	a
55	a	56	b		

Quartile Deviation

Past Exam Questions

PYQ May 18

(1) $\frac{(Q_3 - Q_1)}{(Q_3 + Q_1)}$ is known as

a. Coefficient of Range
b. Coefficient of Q.D.
c. Coefficient of S.D.
d. Coefficient of M.D.

PYQ June 19

(2) The Q.D of 6 numbers 15, 8, 36, 40, 38, 41 is equal to

☆ a. 12.5 b. 25
c. 13.5 d. 37

PYQ June 19

(3) Coefficient of quartile deviation is 1/4 then Q_3 / Q_1 is

☆ a. 5/3 b. 4/3
c. 3/4 d. 3/5

PYQ Jan. 21

(4) Which of the following is a relative measure of dispersion?

a. Range
b. Mean deviation
c. Standard deviation
d. Coefficient of quartile deviation

PYQ June 22

(5) Which is not a measure of central tendency

a. Mean
b. Median
c. Quartile deviation
d. Mode

PYQ June 19

(6) Standard deviation is _____ times of $\sqrt{MD \times QD}$

☆ a. 2/3 b. 4/5
c. $\sqrt{\frac{15}{8}}$ d. $\sqrt{\frac{8}{15}}$

PYQ Nov. 19

(7) The approximate ratio of SD, MD, QD is:

a. 3 : 4 : 5 b. 2 : 3 : 4
c. 15 : 12 : 10 d. 5 : 6 : 7

PYQ Dec 22

(8) If the first quartile in 56.50 and the third quartile is 77.50, then the co-efficient of quartile deviation is:

a. 638.09 b. 15.67
c. 63.80 d. 156.71

PYQ Dec 22

(9) _____ is based on all the observations and _____ is based on the central fifty percent of the observations.

a. Mean deviation, Range
b. Mean deviation, quartile deviation
c. Range, Standard deviation
d. Quartile deviation, standard deviation

PYQ Dec 22

(10) Which one of the following is not a method of measures of dispersion?

a. Standard deviation
b. Mean deviation
c. Range
d. Concurrent deviation method

PYQ June 23

(11) For a given set of normally distributed data, the following statistical parameters are known: Mean = 6; Standard deviation = 2.6; Median = 5 and Quartile deviation = 1.5, then the coefficient of quartile deviation equals to

a. 30 b. 32
c. 25 d. 39

PYQ June 23

(12) If the first quartile is 42.75 and the third quartile is 74.25, then the coefficient of quartile deviation is:

a. 29.62 b. 15.75
c. 17.57 d. 26.92

Answer Key

1 b	2 c	3 a
4 d	5 c	6 c
7 c	8 b	9 b
10 d	11 a	12 d

Quartile Deviation

Mock Test Paper Questions

MTP May 19

(1) The quartiles of a variable are 45, 52 and 65 respectively. Its quartile deviation is

a. 10 b. 20
c. 25 d. 8.30

MTP May 19 Series II

(2) Quartiles can be determined graphically using

a. Histogram
b. Frequency Polygon
c. Ogive
d. Pie chart

MTP May 19 Series II

(3) Which measures of dispersions is not affected by the presence of extreme observations?

a. Range
b. Mean deviation
c. Standard deviation
d. Quartile deviation

MTP May 19 Series II

(4) Which measure is based on only the central fifty percent of the observations?

a. Standard deviation
b. Quartile deviation
c. Mean deviation
d. All these measures

MTP May 20

(5) The appropriate measure of dispersion for open-end classification is

a. Standard deviation
b. Mean deviation
c. Quartile deviation
d. All these measures

MTP May 20

(6) The quartiles of a variable are 45, 52 and 75 respectively. Its quartile deviation is

a. 15 b. 20
c. 25 d. 8.30

MTP May 20

(7) If x and y are related as $3x+4y = 20$ and the quartile deviation of x is 16, then the quartile deviation of y is

a. 16 b. 14
c. 10 d. 12

MTP Nov 20

(8) The quartiles of the variables are 45, 52, and 65 respectively, its Quartile Deviation is

a. 5 b. 10
c. 25 d. 8.30

MTP Apr 21

(9) Interval Quartile Range is ____of Quartile Deviation

☆ a. Half b. Double
c. Triple d. Equal

MTP Nov 21

(10) In the equation $4x+2y = 3$, quartile deviation for y is 3. Find the quartile deviation for x

☆ a. 4.5 b. 6
c. 1.5 d. None of these

MTP Oct 21

(11) If the quartile deviation of x is 6 and $3x + 6y = 20$, what is the quartile deviation of y?

a. 3 b. 4
c. 5 d. 6

MTP March 22

(12) The quartiles of a variable are 45, 52 and 65 respectively. Its quartile deviation is

a. 10 b. 20
c. 25 d. 8.30

MTP March 22

(13) If x and y are related as $3x-4y= 20$ then the Quartile divation of x is 12 , then the Quartile deviation of y is :

a. 14 b. 15
c. 16 d. 9

MTP June 22

(14) The quartile deviation from the following observations is 10,18,20,28,15,17,22,25,29,32,34

☆ is equal to:

a. 8 b. 6
c. 10 d. 5

MTP Dec 22 Series II

(15) The QD of six numbers 15, 8, 36, 40, 38, 41 is equal to:

a. 12.5 b. 25
c. 13.5 d. 37

MTP Dec 22 Series II

(16) Coefficient of Quartile Deviation is 1/4 then Q3/Q1 =?

a. 5/3 b. 4/3
c. 3./4 d. 3/5

MTP Nov 18

(17) If the SD of a variable X is σ then Quartile Deviation (QD) is

a. 4/5 σ b. 3/2 σ
c. 2/3 σ d. 5/4 σ

MTP May 19

(18) Which one is an absolute measure of dispersion?

a. Range
b. Mean Deviation
c. Standard Deviation
d. All these measures

MTP Nov 20

(19) A shift of origin has no impact on

a. Mean deviation
b. Standard deviation
c. Quartile deviation
d. All of these

MTP Nov 20

(20) Which measure of dispersion is based on all the observations

a. Standard deviation
b. Mean deviation
c. Quartile deviation
d. Both (a) and (b)

MTP Apr 21

(21) Which of the below is affected by shifting of scale

a. SD b. MD
c. QD d. All of these

MTP Oct 21

(22) Which one is an absolute measure of dispersion?

a. Range
b. Mean Deviation
c. Standard Deviation
d. All these measures

MTP June 22

(23) The Quartile deviation is

a. 2/3 of SD b. 4/5 of SD
c. 5/6 of SD d. None of these

MTP Dec 22 – Series I

(24) The approximate ratio of SD, MD, QD is

a. 2:3:4 b. 3:4:5
c. 15:12:10 d. 5:6:7

MTP June 2023 Series I

(25) _____ is based on all the observations and _____ is based on the central fifty percent of the observations.

a. Mean deviation, Range
b. Mean deviation, quartile deviation
c. Range, standard deviation
d. Quartile deviation, standard deviation

MTP June 2023 Series I

(26) Which one of the following is not a method of measures of dispersion?

a. Standard deviation
b. Mean deviation
c. Range
d. Concurrent deviation method

MTP June 2023 Series I

(27) If the first quartile in 56. and the third quartile is 77. then the co – efficient of quartile deviation is

a. 18.09 b. 15.79
c. 63.8 d. 56.71

MTP June 2023 Series II

(28) In case of extreme sampling fluctuations, which is the best measure of dispersion?

a. Quartile Deviation
b. Standard Deviation
c. Mean Deviation
d. Range

MTP Dec 22 – Series I

(29) If Quartile deviation is 7. Find the value of x from the arranged series: 2, x, 6, 7, 9, 16, 18.

a. 5 b. 2
c. 8 d. 6

Answer Key

1 a	2 c	3 d
4 b	5 c	6 a
7 d	8 b	9 b
10 c	11 a	12 a
13 d	14 b	15 c
16 a	17 c	18 d
19 d	20 d	21 d
22 d	23 a	24 c
25 b	26 d	27 b
28 a	29 b	

Chapter 15 – Probability

Classical Probability

Past Year Questions

PYQ May 18

(1) Two broad divisions of probability are:
a. Subjective probability and objective probability
b. Deductive probability and mathematical probability
c. Statistical probability and mathematical probability
d. None of these

PYQ May 18

(2) The term "chance" and probability are synonyms:
a. True b. False
c. Both d. None of these

PYQ May 18

(3) Sum of all probabilities mutually exclusive and exhaustive events is equal to
a. 0 b. 1/2
c. 1/4 d. 1

PYQ Nov. 18

(4) The probability that a leap year has 53 Wednesday is
a. $\frac{2}{7}$ b. $\frac{3}{5}$
c. $\frac{2}{3}$ d. $\frac{1}{7}$

PYQ Nov. 18

(5) Two different dice are thrown simultaneously, then the probability, that the sum of two numbers appearing on the top of dice is 9 is:
a. $\frac{8}{9}$ b. $\frac{1}{9}$
c. $\frac{7}{9}$ d. None of these

PYQ June 19

(6) Two event A and B are such that they do not occurs simultaneously then they are called _____ events
a. Mutually exhaustive
b. Mutually exclusive
c. Mutually independent
d. Equally likely

PYQ June 19

(7) According to bayee's theorem,

$$P(E_K / A) = \frac{P(E_K)P(A / E_K)}{\sum_{i=1}^{n} P(E_1)P(A / E_1)} \text{ here}$$

a. $E_1, E_2 \ldots\ldots$ are mutually exclusive
b. $P(E / A_1), P(E / A_2) \ldots\ldots$ are equal to 1
c. $P(A_1 / E), P(A_2 / E) \ldots\ldots$ Are equal to 1
d. A & E_1's are disjoint sets

Note: Bayes Theorem is out of syllabus

PYQ June 19

(8) When 2 – dice are thrown simultaneously then the probability of getting at least one 5 is
a. $\frac{11}{36}$ b. $\frac{5}{36}$
c. $\frac{8}{15}$ d. $\frac{1}{7}$

PYQ Nov. 19

(9) A log contains 15 one rupee coins, 25 two rupees coins and 10 five rupee coins if a coin is selected at random than probability for not selecting a one rupee coin is:
a. 0.30 b. 0.20
c. 0.25 d. 0.70

PYQ Nov. 19

(10) What is the probability of occurring 4 or more than 4 accidents.

No. of acc.	Frequency
0	36
1	27
2	33
3	29
4	24
5	27
6	18
7	9

a. 24 b. 69
c. 38 d. 80

PYQ Nov. 20

(11) When two coins are tossed simultaneously the probability of getting at least one tail?
a. 1 b. 0.75
c. 0.5 d. 0.25

PYQ Nov. 20

(12) When 3 dice are rolled simultaneously the probability of a number on the 3rd dice is greater than the sum of the numbers on two dice.

a. 12/216 b. 36/216
c. 48/216 d. 20/216

PYQ Jan. 21

(13) An event that can be subdivided into further events is called as.

a. A composite event
b. A complex event
c. A mixed event
d. A simple event

PYQ Jan. 21

(14) Three identical and balanced dice are rolled. The probability that the same number will appear on each of them is.

a. $\frac{1}{6}$ b. $\frac{1}{18}$
c. $\frac{1}{36}$ d. $\frac{1}{24}$

PYQ Jan. 21

(15) A basket contains 15 white balls, 25 red balls and 10 blue balls. If a ball is selected at random, the probability of selecting not a white ball.

a. 0.20 b. 0.25
c. 0.60 d. 0.70

PYQ Jan. 21

(16) Two dice are thrown simultaneously. The probability of a total score of 5 from the out comes of dice is.

a. $\frac{1}{18}$ b. $\frac{1}{12}$
c. $\frac{1}{9}$ d. $\frac{2}{5}$

PYQ Jan. 21

(17) If an unbiased coin is tossed twice, then the probability of obtaining at least one tail is.

a. 1 b. 0.5
c. 0.75 d. 0.25

PYQ Jan. 21

(18) If an unbiased coin is tossed three times, what is the probability of getting more than one head?

a. $\frac{1}{2}$ b. $\frac{3}{8}$
c. $\frac{7}{8}$ d. $\frac{1}{3}$

PYQ Dec. 21

(19) Which of the following pair of events E and F are mutually exclusive?

a. E = (Ram's age is 13) and F = (Ram is studying in a college)
b. E = (Sita studies in a school) and F = (sita is a play back singer)
c. E = (Raju is an elder brother in a family) and F = (Raju's father has more than one son)
d. E = (Banu studied B.A. English literature and) F = (Banu can read English novels)

PYQ June 22

(20) What is the probability of occurrence of leap year having 53 Sunday?

a. 1/7 b. 2/7
c. 3/7 d. 4/7

PYQ June 22

(21) Two perfect dice are rolled what is the probability that one appears at least in one of the dice?

a. $\frac{7}{36}$ b. $\frac{11}{36}$
c. $\frac{9}{36}$ d. $\frac{15}{36}$

PYQ June 22

(22) If p:q are the odds in favour of an event, then the probability of that event is -

a. $\frac{p}{q}$ b. $\frac{p}{p+q}$
c. $\frac{q}{p+q}$ d. $\frac{q}{p}$

PYQ Dec 22

(23) The probability that a leap year has 53 Monday is:

a. $\frac{1}{7}$ b. $\frac{2}{3}$
c. $\frac{2}{7}$ d. $\frac{3}{5}$

PYQ Dec 22

(24) If a number is selected at random from the first 50 natural numbers, what will be the probability that the selected number is a multiple of 3 and 4?

a. 5/50 b. 2/25
c. 3/30 d. 4/25

PYQ Dec 22

(25) If three coins are tossed simultaneously, what is the probability of getting two heads together?

a. 1/4 b. 1/8
c. 5/8 d. 3/8

PYQ Jun 23

(26) Four persons are chosen at random from a group of 3 me, 2 women and 4 children. The probability that exactly 2 of them are children, is

a. $\frac{10}{21}$ b. $\frac{1}{12}$
c. $\frac{1}{5}$ d. $\frac{1}{9}$

Answer Key

1	a	2	a	3	d
4	a	5	b	6	b
7	a	8	a	9	d
10	c	11	b	12	d
13	a	14	c	15	d
16	c	17	c	18	a
19	a	20	b	21	b
22	b	23	c	24	b
25	d	26	a		

Classical Probability

Mock Test Paper Questions

MTP May 18

(1) If p: q is the odds in favor of an event, then the probability of that event is

a. $\frac{p}{q}$
b. $\frac{q}{p+q}$
c. $\frac{p}{p+q}$
d. None of these

MTP May 18

(2) If P (A) = 4/9; then the odd against the event 'A' is

a. 4:9 b. 4:5
c. 5:4 d. 4:14

MTP Nov 18

(3) The probability of A solving a problem is $\frac{7}{12}$ the odds against solving a problem

a. 5:7 b. 4:7
c. 5:8 d. 4:5

MTP Nov 18

(4) If two letters are taken at random from the word HOME, what is the Probability that none of the letters would be vowels?

a. 1/6 b. 1/2
c. 1/3 d. 1/4

MTP Nov 18

(5) From a bag containing 10 black and 20 white balls, a ball is drawn at random. What is the probability that is black?

a. 1/2 b. 1/3
c. 1 d. 2

MTP May 19

(6) If a card is drawn at random from a pack of 52 cards, what is the chance of getting a Spade or an ace?

a. 4/13 b. 5/13
c. 0.25 d. 0.20

MTP Nov 19

(7) If one card is drawn at random from a pack of playing cards; find the probability it is neither a hearts nor a club:

a. $\frac{1}{2}$ b. $\frac{1}{4}$
c. $\frac{1}{8}$ d. None of these

MTP Nov 19

(8) Three balls are drawn at random from a bag containing 6 blue and 4 red balls. What is the chance that 2 balls are blue and 1 is red?

a. $\frac{1}{4}$ b. $\frac{3}{4}$
c. $\frac{1}{2}$ d. None of these

MTP May 20

(9) What is the chance of picking a spade or an ace not of spade from a pack of 52 cards?

a. 4/13 b. 2/13
c. 3/26 d. 3/18

MTP Nov 20

(10) What is the probability of getting neither total of 7 nor 11 when the pair of dice is tossed?
a. 7/9 b. 2/9
c. 3/9 d. 4/9

MTP March 21

(11) In a non-leap year, the probability of getting 53 Sundays or 53 Tuesday or 53 Thursday is
a. 4/7 b. 2/7
c. 3/7 d. 1/7

MTP Apr 21

(12) If a card is drawn at random from a pack of 52 cards, what is the chance of getting a Spade or an ace?
a. 4/13 b. 5/13
c. 0.25 d. 0.20

MTP Apr 21

(13) A card is drawn from a pack of playing cards at random. What is the probability that the card drawn a king or red colour?
a. 1/4 b. 4/13
c. 7/13 d. 1/2

MTP Nov 21

(14) One card is drawn from a pack of 52 , what is the probability that is a king or queen ?
a. 11/13 b. 2/13
c. 1/13 d. None of these

Note: MTP Ans is wrong.

MTP Nov 21

(15) The probability that a leap year has 53 Wednesday is
a. 2/7 b. 5/3
c. 2/3 d. 1/7

MTP Nov 21

(16) A coin is tossed six times, then the probability of obtaining heads and tails alternatively is
a. 1/2 b. 1/64
c. 1/32 d. 1/16

MTP Nov 21

(17) Two different dice are thrown simultaneously, then the probability, that the sum of two numbers appearing on the top of dice 9 is
a. 8/9 b. 1/9
c. 7/9 d. None of these

MTP Oct 21

(18) Following are the wages of 8 workers in rupees: 50, 62, 40, 70, 45, 56, 32, 45. If one of the workers is selected at random, what is the probability that his wage would be lower than the average wage?
a. 0.625 b. 0.500
c. 0.375 d. 0.450

MTP Dec 22 – Series I

(19) Let P be a probability function on S = {X1, X2, X3) if P(X1)=1/4 and P(X3) = 1/3 then P(X2) is equal to:
a. 5/12 b. 7/12
c. 3/4 d. None of these

MTP Dec 22 – Series I

(20) In a non-leap year, the probability of getting 53 Sundays or 53 Tuesdays, or 53 Thursdays is:
a. 4/7 b. 2/7
c. 3/7 d. 1/7

MTP Dec 22 Series II

(21) When 2 dice are thrown simultaneously then the probability of getting at least one 5 is:
a. 11/36 b. 5/36
c. 8/15 d. 1/7

MTP Dec 22 Series II

(22) The probability that a leap year has 53 Wednesday is:
a. 2/7 b. 3/5
c. 1/7 d. 2/3

MTP June 2023 Series I

(23) Ticket numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn bears a number which is multiple of 3 or 7?
a. 1/5 b. 2/5
c. 3/5 d. None of these

MTP June 2023 Series I

(24) The probability that is leap year has 53 Sunday is:
a. 1/7 b. 2/3
c. 2/7 d. 3/5

MTP June 2023 Series I

(25) If three coins are tossed simultaneously, what is the probability of getting two heads together?
a. 1/4 b. 1/8
c. 5/8 d. 3/8

MTP June 2023 Series II

(26) If a card is drawn randomly from a deck, the probability of the card being neither a red card nor a face card?

a. 5/13 b. 6/17
c. 12/27 d. 5/7

MTP June 2023 Series II

(27) If two dice are thrown then what is the probability that the sum of the faces of dice are square or cube number?

a. 1/4 b. 1/2
c. 1/3 d. None of these

Answer Key

1	c	2	c	3	a
4	a	5	b	6	a
7	a	8	c	9	a
10	a	11	c	12	a
13	c	14	b	15	a
16	c	17	b	18	b
19	a	20	c	21	a
22	a	23	b	24	c
25	a	26	a	27	c

Set based Probability

Past Year Questions

PYQ May 18

(1) What is the probability of having at least one ' six' in 3 throws of a project die?

a. 5/6 b. $(5/6)^3$
c. $1-(1/6)^3$ d. $1-(5/6)^3$

PYQ Nov. 18

(2) If, $P(A)=\frac{1}{2}$, $P(B)=\frac{1}{3}$, and $P(A\cap B)=\frac{1}{4}$, then $P(A\cup B)$ is equal to

a. $\frac{11}{12}$ b. $\frac{10}{12}$
c. $\frac{7}{12}$ d. $\frac{1}{6}$

PYQ Nov. 18

(3) A coin is tossed six times, then the probability of obtaining heads and tails alternatively is

a. $\frac{1}{2}$ b. $\frac{1}{64}$
c. $\frac{1}{32}$ d. $\frac{1}{16}$

PYQ Nov. 18

(4) Ram is known to hit a target in 2 out of 3 shots where as shyam is known to hit the same target in 5 out of 11 shots. What is the probability that the target would be hit if they both try?

a. $\frac{9}{11}$ b. $\frac{3}{11}$
c. $\frac{10}{33}$ d. $\frac{6}{11}$

PYQ Nov. 18

(5) If $P(A\cup B)=0.8$ and $P(A\cap B)=0.3$, then $P(\bar{A})+P(\bar{B})$ is equal to

☆ a. 0.3 b. 0.5
c. 0.7 d. 0.9

PYQ June 19

(6) If a coin is tossed 5 times then the probability of getting Tail and Head occurs alternatively is

a. $\frac{1}{8}$ b. $\frac{1}{16}$
c. $\frac{1}{32}$ d. $\frac{1}{64}$

PYQ Nov. 19

(7) Two letters are chosen from the word HOME. What is the probability that the letters chosen are not vowels.

a. ½ b. 1/6
c. 2/3 d. 0

PYQ Nov. 19

(8) If A, B, C are three mutually exclusive and exhaustive events such that: $P(A)=2(B)=3P(C)$ what is $P(B)$?

a. 6/11 b. 3/11
c. 1/6 d. 1/3

PYQ Nov. 19

(9) What is the probability of getting 7 or 11 when two dices are thrown?

a. 2/9 b. 6/36
c. 10/36 d. 2/36

PYQ Nov. 20

(10) When 2 fair dice are thrown, what is the probability of getting the sum which is a multiple of 3?

a. 4/36 b. 13/36
c. 2/36 d. 12/36

PYQ Nov. 20

(11) If A speaks 75% of truth and B speaks 60% of truth. In what percentage both of them likely contradict with each other in narrating the same questions?

a. 0.60 b. 0.45
c. 0.65 d. 0.35

PYQ July 21

(12) If there are 48 marbles market with numbers 1 to 48, then the probability of selecting a marble having the number divisible by 4 is;

a. 1/2 b. 2/3
c. 1/3 d. 1/4

PYQ July 21

(13) A bag contains 7 blue and 5 green balls. One ball is drawn at random. The probability of getting a blue ball is_____.

a. 5/12 b. 12/35
c. 7/12 d. 0

PYQ July 21

(14) The probability that a football team loosing a match at Kolkata is 3/5 and winning a match at Bengaluru is 6/7; the probability of the team winning at least one match is_____.

a. 3/35 b. 18/35
c. 32/35 d. 17/35

PYQ July 21

(15) A biased coin is such that the probability of getting a head is thrice the probability of getting a tail, if the coin is tossed 4 times, what is the probability of getting a head all the times?

a. 2/5 b. 81/128
c. 81/256 d. 81/64

PYQ July 21

(16) If there are 16 phones, 10 of them are Android and 6 of them Apple, then the probability of 4 randomly selected phones to include 2 Android and 2 Apple phone is:

a. 0.47 b. 0.51
c. 0.37 d. 0.27

PYQ June 22

(17) A dice is rolled twice. Find the probability of getting numbers multiple of 3 or 5?

a. $\frac{1}{3}$ b. $\frac{1}{4}$
c. $\frac{19}{36}$ d. $\frac{1}{6}$

PYQ June 22

(18) ☆ If in a bag of 30 balls numbered from 1 to 30. Two balls are drawn find probability of getting a ball being multiple of 2 or 5

a. $\frac{108}{465}$ b. $\frac{117}{435}$
c. $\frac{117}{300}$ d. $\frac{116}{485}$

PYQ June 22

(19) If $P(A) = 0.3$; $P(B) = 0.8$ and $P\left(\frac{B}{A}\right) = 0.5$, find $P(A \cup B)$

a. 0.85 b. 0.95
c. 0.55 d. 0.5

PYQ Dec 22

(20) If $P(A) = \frac{1}{3}$, $P(B) = \frac{3}{4}$ and $P(A \cup B) = \frac{11}{12}$ then $P\left(\frac{B}{A}\right)$ is:

a. $\frac{1}{6}$ b. $\frac{4}{9}$
c. $\frac{1}{2}$ d. $\frac{1}{8}$

PYQ Jun 23

(21) For any two events 'A' and 'B' it is known that $P(A) = 2/3$, $P(B) = 3/8$ and $P(A \cap B) = 1/4$, then the events A and B are:

a. Mutually exclusive and Independent
b. Mutually not exclusive and Independent
c. Mutually exclusive but not independent
d. Neither independent nor mutually exclusive

PYQ June 23

(22) The probability that a four digit number comprising the digits 2, 5, 6 and 7 without repetition of digits, would be divisible by 4 is

a. 1/2 b. 3/4
c. 1/4 d. 1/3

Answer Key

1 d	2 c	3 c
4 a	5 d	6 b
7 b	8 b	9 a
10 d	11 b	12 d
13 c	14 c	15 c
16 c	17 c	18 b
19 b	20 c	21 b
22 d		

Set based Probability

Mock Test Paper Questions

MTP Nov 18

(1) Two events A& B Probabilities 0.24 and 0.52 respectively. If the probability of both A and B occurs simultaneously is 0.15. Then the probability that neither A nor B occur is 0.15, then the probabilities that neither A nor B is.

a. 0.39 b. 0.375
c. 0.61 d. 0.86

MTP May 19

(2) If $P(A \cap B) = 0$, then the two events A and B are

a. Mutually exclusive
b. Exhaustive
c. Equally likely
d. Independent.

MTP May 19

(3) If A, B and C are mutually exclusive and exhaustive events, then $P(A) + P(B) + P(C)$ equals to

a. 1/3
b. 1
c. 0
d. any value between 0 and 1.

MTP May 19 Series II

(4) Addition Theorem of Probability states that for any two events A and B

a. $P(A \cup B) = P(A) + P(B)$
b. $P(A \cup B) = P(A) + P(B) + P(A \cap B)$
c. $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
d. $P(A \cup B) = P(A)\,P(B)$

MTP May 20

(5) Three events A, B and C are mutually exclusive, exhaustive and equally likely. What is the probably of the complementary event of A?

a. 1/3 b. 2/3
c. 3/7 d. 1

MTP May 20

(6) Find the probability that a four-digit number comprising the digits 2, 5, 6 and 7 would be ☆ divisible by 4.

a. 1/4 b. 1/3
c. 1/2 d. 1

MTP Nov 20

(7) If A and B are two events, such that $P(A) = 1/4$, $P(B) = 1/3$ and $P(A \cup B) = 1/2$, then $P(B/A)$ is equal to

a. 3/4 b. 1/2
c. 1/4 d. 1/3

MTP March 21

(8) If A and B are two events and $P(A) = 2/3$, $P(B) = 3/5$, $P(A \cup B) = 5/6$, then the value of $P\left(\frac{A'}{B'}\right)$ is :

a. 1/4. b. 5/12
c. 5/8 d. 5/4

MTP Apr 21

(9) $P(A) = 0.45$, $P(B) = 0.36$ and $P(A \cap B) = 0.25$ then $P(A/B) = ?$

a. 1.40 b. 1.80
c. 0.714 d. 0.556

Note: Correct Ans should be 0.6944 (all options are incorrect)

MTP JUNE 22

(10) A husband and a wife appear in an interview for two vacancies in the same post. The ☆ probability of husband's selection is 3/5 and that of wife's selection is 1/5. Then the probability that only one of them is selected is

a. 16/25 b. 17/25
c. 14/25 d. None of these

MTP Dec 22 – Series I

(11) Thirty balls are serially numbered and placed in bag. Find chance that the first ball drawn is a multiple of 3 or 5

a. 8/15 b. 2/15
c. 1/2. d. 7/15

MTP Dec 22 – Series I

(12) The odds in favor of event A in a trial is 3:1. In three independent trials, the probability of non-occurrence of event A is

a. 1/64 b. 1/32
c. 1/27 d. 1/8

MTP Dec 22 Series II

(13) Two events A and B are such that they do not occur simultaneously then they are called _____ events.

a. Mutually exhaustive
b. Mutually Exclusive
c. Mutually Independent
d. Equally Likely

MTP June 2023 Series I

(14) If $P(A)=1/3$, $P(B)=3/4$ and $P(A \cap B)=1/6$ then $P(A/B)$ is:
- a. 1/6
- b. 2/9
- c. 1/2
- d. 1/8

MTP June 2023 Series I

(15) If a number is selected at random from the first 50 natural numbers, what will be the probability that the selected number is a multiple of 3 and 4?
- a. 5/50
- b. 2/25
- c. 3/50
- d. 4/25

MTP Jun 23 – Series II

(16) A number is selected at random from first 70 natural numbers. What is the chance that it is a multiple of either 5 or 14?
- a. 6/35
- b. 8/35
- c. 10/35
- d. None of these

MTP Jun 23 – Series II

(17) Probability of Ramesh & Deepak speaking truth is 1/4, 3/5. Find the probability of at most one of them speaks truth.
- a. 0.60
- b. 0.85
- c. 0.75
- d. None of these

Answer Key

1	a	2	a	3	b
4	c	5	b	6	b
7	d	8	b	9	c
10	c	11	d	12	a
13	b	14	b	15	b
16	d	17	b		

Conditional Probability

Past Year Exam Questions

PYQ May 18

(1) The theorem of compound probability states that for any two events A and B
- a. $P(A \cap B)=P(A)\times P(B/A)$
- b. $P(A \cup B)=P(A)\times P(B/A)$
- c. $P(A \cap B)=P(A)\times P(B)$
- d. $P(A \cup B)=P(A)+P(B)-P(A \cap B)$

PYQ July 21

(2) If in a class, 60% of the student study. Mathematics and science and 90% of the students study science, then the probability of a student studying mathematics given that he/she is already studying science is:
- a. 1/4
- b. 2/3
- c. 1
- d. 1/2

PYQ Dec. 21

(3) For any two dependent events A and B, $P(A) = 5/9$ and $P(B) = 6/11$ and $P(A \cap B) = 10/33$. What are the values of $P(A/B)$ and $P(B/A)$?
- a. 5/9, 6/11
- b. 5/6, 6/11
- c. 1/9, 2/9
- d. 2/9, 4/9

PYQ Dec. 21

(4) In a group of 20 males and 15 females, 12 males and 8 females are service holders. What is the probability that a person selected at random from the group is a service holder given that the selected person is a male?
- a. 0.40
- b. 0.60
- c. 0.45
- d. 0.55

PYQ Dec. 21

(5) There are 3 boxes with the below composition:
Box 1 : 7 Red + 5 White + 4 Blue balls
☆ Box 2 : 5 Red + 6 White + 3 Blue balls
Box 3 : 4 Red + 3 White + 2 Blue balls
One of the boxes is selected at random and a ball is drawn from it. What is the probability that drawn ball is red?
- a. 1249/3024
- b. 1247/3004
- c. 1147/3024
- d. 1/2

PYQ Dec. 22

(6) A machine is made of two parts A and B. The manufacturing process of each part is such that probability of defective in part A is 0.08 and that B is 0.05. What is the probability that the assembled part will not have any defect?
- a. 0.934
- b. 0.864
- c. 0.85
- d. 0.874

PYQ Dec 22

(7) Suppose A and B are two independent events with probabilities $P(A) \neq 0$ and $P(B) \neq 0$. Let A′ and B′ be their complements. Which one of the following statements in FALSE?
- a. $P(A \cap B)=P(A)\times P(B)$
- b. $P(A/B)=P(A)$
- c. $P(A \cup B)=P(A)+P(B)$
- d. $P(A' \cap B')=P(A')\times P(B')$

PYQ Dec 22

(8) The theorem of compound probability states that for any two events A and B.

a. $P(A \cap B) = P(A) \times P(B/A)$
b. $P(A \cup B) = P(A) \times P(B/A)$
c. $P(A \cap B) = P(A) \times P(B)$
d. $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

PYQ Jun 23

(9) Company 'A' produces 10% defective products, company 'B' produces 20% defective products and company 'C' produces 5% defective products. If choosing a company is an equally likely event, what is probability that product chosen is free from defect?

a. 0.88
b. 0.80
c. 0.79
d. 0.78

PYQ Jun 23

(10) If $P(A) = \frac{1}{3}, P(B)\frac{1}{4}, P(A/B) = \frac{1}{6}$, the probability $P\left(\frac{B}{A}\right)$ is

a. $\frac{1}{8}$ b. $\frac{1}{4}$
c. $\frac{3}{8}$ d. $\frac{1}{2}$

Answer Key

1 a	2 b	3 a
4 b	5 a	6 d
7 c	8 a	9 a
10 a		

Conditional Probability

Mock Test Paper Questions

MTP May 18

(1) If two events A and B are independent, the probability that both will occur is given by

a. $P(A) \times P(B)$
b. $P(A) + P(B)$
c. $P(A) + P(B) - P(A \cup B)$
d. $P(A) + P(B) - P(A \cap B)$

MTP Nov 18

(2) If $P(A) = 1$ and $P(B) = 1/3$ then $P(A/B) =$

a. 1/3 b. 2/3
c. 1 d. ½

MTP Nov 18

(3) A probability in statistics is given to five students A, B, C, D and E. Their chances of is 1/2, 1/3,1/4, 1/5, 1/6. What's the probability that the problem will be solved.

a. 1/6 b. 5/6
c. 1 d. None

MTP May 19

(4) Given that $P(A) = 1/2$, $P(B) = 1/3$, $P(A \cap B) = 1/4$, what is $P(A'/B')$

a. 1/2 b. 7/8
c. 5/8 d. 2/3

Note: Typing Mistake in MTP

MTP May 19 Series II

(5) If for two events A and B, $P(A \cap B) = P(A) \times P(B)$, then the two events A and B are

a. Independent
b. Dependent
c. Not equally likely
d. Not exhaustive

MTP May 19 Series II

(6) If an unbiased die is rolled once, odds in favour of getting a point which is a multiple of 3 is

a. 1:2 b. 2:1
c. 1:3 d. 3:1

MTP May 19 Series II

(7) A, B, C are three mutually independent with probabilities 0.3, 0.2 and 0.4 respectively. What is $P(A \cap B \cap C)$?

a. 0.400 b. 0.240
c. 0.024 d. 0.500

Note: Typing Mistake in MTP

MTP May 19 Series II

(8) What is the chance of throwing at least 7 in a single cast with 2 dice?

a. 5/12 b. 7/12
c. 1/4 d. 17/63

MTP Nov 19

(9) The probability that a person travels by a plane is $\frac{1}{5}$ and that he travels by train is $\frac{2}{3}$. Find the probability of his traveling neither by plane nor by train?

a. $\frac{13}{15}$ b. $\frac{2}{15}$

c. $\frac{1}{15}$ d. None of these

MTP May 20

(10) The probability that an Accountant's job applicant has a B. Com. Degree is 0.85, that he is a CA is 0.30 and that he is both B. Com. and CA is 0.25 out of 500 applicants, how many would be B. Com. or CA?

a. 0.25 b. 0.30

c. 0.10 d. 0.90

Note: Number of persons are required in question and not the probability but options give probability.

MTP May 20

(11) Rupesh is known to hit a target in 5 out of 9 shots whereas David is known to hit the same target in 6 out of 11 shots. What is the probability that the target would be hit once they both try?

a. 79/99 b. 10/13

c. 14/26 d. 13/18

MTP May 20

(12) In connection with a random experiment, it is found that $P(A) = 2/3$, $P(B) = 3/5$ and $P(A \cup B) = 5/6$, find $P(A/B)$

a. 7/18 b. 1/13

c. 5/18 d. 13/18

MTP Nov 20

(13) ☆ An investment consultant predicts that the odds against the price of a certain stock going up are 2:1 and odd are in favor of the price remaining the same are 1:3. what is the probability that the price of stock will go down?

a. 5/12 b. 7/12

c. 1/3 d. 1/4

MTP Nov 20

(14) A pair of dice rolled. If the sum of the two dice is 9, find the probability that one of the dice showed is 3

a. 1/3 b. 1/4

c. 1/2 d. 1/8

MTP Nov 20

(15) ☆ What is the probability that a leap year selected at random contains either 53 Sundays or 53 Mondays

a. 2/7 b. 3/7

c. 4/7 d. 1/7

MTP March 21

(16) The odds are 9:5 against a person who is 50 years living till he is 70 and 8:6 against a person who is 60 living till he is 80. Find the probability that at least one of them will be alive after 20 years.

a. 11/14 b. 22/49

c. 31/49 d. 35/49

MTP March 21

(17) What is the chance of throwing at least 7 in a single cast with two dices?

a. 5/12 b. 7/12

c. 1/4 d. 17/36

MTP Apr 21

(18) ☆ A bag contains 12 balls of which 3 are red and 5 balls are drawn at random. Find the probability that 5 balls 3 are red

a. 3/132 b. 5/396

c. 1/36 d. 1/22

MTP Nov 21

(19) ☆ A bag contains 4 Red and 5 Black balls. Another bag contains 5 Red and 3 Black balls. If one ball is drawn at random each bag. Then the probability that one red and one black is

a. 12/72 b. 25/72

c. 37/72 d. 13/72

MTP Oct 21

(20) Given that for two events A and B, $P(A) = 3/5$, $P(B) = 2/3$ and $P(A \cup B) = 3/4$, what is $P(A/B)$?

a. 0.655 b. 13/60

c. 31/60 d. 0.775

MTP Oct 21

(21) A problem in probability was given to three CA students A, B and C whose chances of solving it are 1/3, 1/5 and 1/2 respectively. What is the probability that the problem would be solved?

a. 4/15 b. 7/8

c. 8/15 d. 11/15

MTP Oct 21

(22) A packet of 10 electronic components is known to include 2 defectives. If a sample of 4 components is selected at random from the packet, what is the probability that the sample does not contain more than 1 defective?

a. 1/3 b. 2/3
c. 13/15 d. 3/15

MTP Oct 21

(23) The probability that there is at least one error in an account statement prepared by 3 persons A, B and C are 0.2, 0.3 and 0.1 respectively. If A, B and C prepare 60, 70 and 90 such statements, then the expected number of correct statements

a. 170 b. 176
c. 178 d. 180

MTP March 22

(24) Given that for two events A and B, $P(A) = 3/5$, $P(B) = 2/3$ and $P(A) = 3/4$, what is $P(A/B)$?

a. 0.655 b. 13/60
c. 31/60 d. 0.775

MTP June 22

(25) If $P(A) = 1/2, P(B) = 1/3$, and $P(A \cap B) = \frac{1}{4}$, then the value of $P(A' \cup B')$ is

a. 1/4 b. 3/4
c. 2/5 d. None of these

MTP June 22

(26) A bag contains 5Red and 4 Black balls. A ball is drawn at random from the bag and put into another bag contains 3 red and 7 black balls. A ball is drawn randomly from the second bag. What is the probability that it is red?

a. 32/99 b. 1/3
c. 74/99 d. None of these

MTP Dec 22 – Series I

(27) A speaks truth in 60% of the cases and B in 90% of the cases. In what percentage of cases are they likely to contradict each other in stating the same fact:

a. 36% b. 42%
c. 54% d. None of these

MTP Dec 22 – Series I

(28) A candidate is selected for interview for 3 posts. For the first there are 3 candidates, for second there are 4 and for third there are 2. What are the chances of his getting at least one post?

a. 3/4 b. 2/3
c. 1/10 d. 1

MTP Dec 22 – Series I

(29) A card is drawn from a pack of playing cards and then another card is drawn without the first being replaced. What is the probability of getting two kings:

a. 7/52 b. 1/221
c. 3/221 d. None of these

MTP Dec 22 Series II

(30) Ram is known to hit a target in 2 out of 3 shots whereas Shyam is known to hit the same target in 5 out of 11 shots. What is the probability that the target would be hit if they both try?

a. 9/11 b. 6/11
c. 10/33 d. 3/11

MTP June 2023 Series I

(31) A class consists of 10 boys and 20 girls of which half the boys and half the girls have blue eyes. Find the probability that a student chosen random is a boy and has blue eyes.

a. 1/6 b. 3/5
c. 1/2 d. None of these

MTP June 2023 Series I

(32) A machine is made of two parts A and B. The manufacturing process of each part is such that probability of defective in part A is 0.08 and that B is 0.05. What is the probability that the assembled part will not have any defect?

a. 0.934 b. 0.864
c. 0.85 d. 0.874

MTP June 2023 Series II

(33) From a deck of 52 cards, two cards are drawn at random. What is the probability that they are a king and a queen, if the cards are drawn one after the other without replacement?

a. $\frac{4}{52} \times \frac{4}{51}$

b. $2 \times \frac{4}{52} \times \frac{4}{51}$

c. $\frac{4}{52} \times \frac{3}{51} \times \frac{4}{52} \times \frac{3}{51}$

d. None of these

MTP June 2023 Series II

(34) In a poker set there are 90 chips numbered from 1 to 90. Dan picks 3 chips random, one after the other, without replacement. What is the probability that the numbers on the chips, in the order that the picks them are in descending order?

a. 1/3 b. 1/30
c. 1/6 d. None

Answer Key

1 a	2 c	3 b
4 c	5 a	6 a
7 c	8 b	9 b
10 d	11 a	12 d
13 a	14 c	15 b
16 c	17 b	18 d
19 c	20 d	21 d
22 c	23 c	24 d
25 b	26 a	27 b
28 a	29 b	30 a
31 a	32 d	33 b
34 c		

Random Variable

Past Year Exam Questions

PYQ May 18

(1) Variance of a random variable x is given by

a. $E(X-\mu)^2$ b. $E\left[X-E(X)\right]^2$
c. $E(X^2-\mu)$ d. (a) or (b)

PYQ May 18

(2) If two random variables x and y are related by $y = 2 - 3x$, then the SD of y is

a. $-3 \times SD$ of x
b. $3 \times$ SD of x
c. $9 \times$ SD of x
d. $2 \times$ SD of x

PYQ June 19

(3) If $y \geq x$ then mathematical expectation is

a. $E(X) > E(Y)$
b. $E(X) \leq E(Y)$
c. $E(X) = E(Y)$
d. $E(X).E(Y) = 1$

PYQ July 21

(4) The value of K for the probability density function of a variate X is equal to:

X	P(x)
0	5k
1	3k
2	4k
3	6k
4	7k
5	9k
6	11k

a. 39 b. $\frac{1}{40}$
c. $\frac{1}{49}$ d. $\frac{1}{45}$

PYQ Dec. 21

(5) Assume that the probability for rain on a day is 0.4. An umbrella salesman can earn ₹ 400 per day in case of rain on that day and will lose ₹ 100 per day if there is no rain. The expected earnings in (in ₹) per day of the salesman is

a. 400 b. 200
c. 100 d. 0

PYQ Dec. 21

(6) The probability distribution of a random variable x is given below:

X	P
1	0.15
2	0.25
4	0.2
5	0.3
6	0.1

What is the standard deviation of x?

a. 1.49 b. 1.56
c. 1.69 d. 1.72

PYQ Dec. 21

(7) ☆ For a probability distribution, probability is given by, $P(x_i) = \frac{x_i}{k}, x_i = 1,2,.....9$. The value of k is

a. 55 b. 9
c. 45 d. 81

PYQ Dec. 21

(8) ☆ If two dice are rolled and one of the dice shows 1 at a point then how many such outcome can be done where it is known that its probability is $\frac{x}{36}$, where $x =$ _____.

a. 11 b. 7
c. 8 d. 9

PYQ Jun 23

(9) The probability distribution of x is given below:

Value of x:	Probability:
1	p
0	1-p
Total	1

Mean is equal to

a. p b. $1-p$
c. 0 d. 1

PYQ Jun 23

(10) If a random variable X has the following probability distribution, then the expected value of X is:

X	F(x)
-1	$\frac{1}{3}$
-2	$\frac{1}{6}$
0	$\frac{1}{5}$
1	$\frac{1}{6}$
2	$\frac{1}{3}$

a. $\frac{3}{2}$ b. $\frac{1}{2}$
c. $\frac{1}{6}$ d. $\frac{1}{3}$

PYQ Jun 23

(11) On a commodity exchange when booking trades with provision for stop-losses, a trader can make a profit of ₹ 50,000 or incur a loss of ₹ 20,000. The probabilities of making profit and incurring loss, from the past experience, are known to be 0.75 and 0.25 respectively. The expected profit to be made by trader should be

a. ₹ 32,500 b. ₹ 35,000
c. ₹ 30,000 d. ₹ 40,000

Answer Key

1 d	2 b	3 b
4 d	5 c	6 c
7 c	8 a	9 a
10 c	11 a	

Random Variable

Mock Test Paper Questions

MTP May 18

(1)

x	-20	-10	30	75	80
P(x)	3/20	1/5	1/2	1/10	1/20

Find the Expected value of following distribution

a. 20.5 b. 21.5
c. 22.5 d. 24.5

MTP May 19

(2) Variance of a random variable x is given by

a. $E(x-\mu)^2$ b. $E[x-E(x)]^2$
c. $E(x^2-\mu)$ d. A or B

MTP May 19

(3) If a random variable x assumes the values $x_1, x_2, x_3, x_4, \ldots$ with corresponding probabilities, $p_1, p_2, p_3, p_4, \ldots$ then the expected value of x is

a. $p_1+p_2+p_3+p_4$
b. $x_1p_1+x_2p_3+x_3p_2+x_4p_4$
c. $x_1p_1+x_2p_2+x_3p_3+x_4p_4$
d. None

MTP Nov 19

(4) Let X be a random variable with the following distribution

x	-2	4	8
P(x)	1/6	1/3	1/2

Find expected value of the random variable

a. 5 b. 6
c. 7 d. 8

MTP May 20

(5) In a business venture, a man can make a profit of ₹ 50,000 or incur a loss of ₹ 20,000. The probabilities of making profit or incurring loss, from the past experience, are known to be 0.75 and 0.25 respectively. What is his expected profit?

a. ₹ 33,500 b. ₹ 34,500
c. ₹ 35,500 d. ₹ 32,500

MTP Apr 21

(6) From the following probability distribution table, find E(x).

X	1	2	3
F(x)	1/2	1/3	1/6

a. 1 b. 1.50
c. 1.67 d. None of these

MTP Nov 21

(7) If X and Y are two random variables and if E(X) =3 and E(Y) = 6, then E(XY) = ?

a. 3 b. 6
c. 18 d. 24

MTP Nov 21

(8) Probability distribution may be

a. Discrete b. Continuous
c. Infinite d. (a) or (b)

MTP Nov 21

(9) The probability distribution of the demand for a commodity is given below

X	5	6	7	8	9	10
P(X)	0.05	0.10	0.30	0.40	0.10	0.05

Expected value of demand will be

a. 7.55 b. 7.85
c. 1.25 d. 8.35

MTP Nov 21

(10) An unbiased coin is tossed 6 times. Find the probability that the tosses result in heads only.

a. 1/64 b. 5/64
c. 10/64 d. None of these

MTP Oct 21

(11) A bag contains 6 white and 4 red balls. If a person draws 2 balls and receives ₹ 10 and ₹ 20 for a white and red balls respectively, then his expected amount is

a. ₹25 b. ₹26
c. ₹29 d. ₹28

MTP March 22

(12) For a probability of a random variable x is given below :

X	1	2	4	5	6
Y	0.15	0.25	0.2	0.3	0.1

What is the Standard deviation of x ?

a. 1.49 b. 1.56
c. 1.69 d. 1.72

MTP March 22

(13) If $2x + 3y + 4 = 0$ and $V(x) = 6$ then $V(y)$ is

a. 8/3 b. 9
c. 9 d. 6

MTP March 22

(14) Four unbiased coins are tossed simultaneously. The expected number of heads is :

X :	0	1	2	3	4
P(x)	1/16	4/16	6/16	4/16	1/16

a. 1 b. 2
c. 3 d. 4

MTP March 22

(15) Assume that the probability for rain on a day is 0.4 . An umbrella salesman can earn ₹400 per day in case of rain on that day will lose ₹100 per day if there is no rain . The expected earnings (in₹) per day of the salesman is

a. 400 b. 200
c. 100 d. 0

MTP June 22

(16) From the following probability distribution table, find E(x).

x:	1	2	3
f(x):	1/2	1/3	1/6

a. 1 b. 1.50
c. 1.67 d. None of these

Answer Key

1 b	2 d	3 c
4 a	5 d	6 c
7 c	8 d	9 a
10 a	11 d	12 c
13 a	14 b	15 c
16 c		

Chapter 16 – Theoretical Distributions

Binomial Distribution

Past Year Questions

PYQ May 18

(1) The variance of a binomial distribution with parameters n and p is:

a. $np^2(1-p)$ b. $\sqrt{np-(1-p)}$

c. $nq(1-q)$ d. $n^2p^2(1-p)^2$

PYQ May 18

(2) An example of a bi-parametric discrete probability distribution is

a. Binomial distribution

b. Poisson distribution

c. Normal distribution

d. Both (a) and (b)

PYQ May 18

(3) Probability distribution may be

a. Discrete b. Continuous

c. Infinite d. (a) or (b)

PYQ Nov. 18

(4) The mean of the Binomial distribution $B\left(4,\frac{1}{3}\right)$ is equal to

a. $\frac{3}{5}$ b. $\frac{8}{3}$

c. $\frac{3}{4}$ d. $\frac{4}{3}$

PYQ Nov 18

(5) The probability that a student is not a swimmer is $\frac{1}{5}$, then the probability that out of five students four are swimmer is

a. $\left(\frac{4}{5}\right)^4\left(\frac{1}{5}\right)$

b. ${}^5C_1\left(\frac{1}{5}\right)^4\left(\frac{4}{5}\right)$

c. ${}^5C_4\left(\frac{4}{5}\right)^1\left(\frac{1}{5}\right)^4$

d. None of the above

PYQ June 19

(6) If mean and variance are 5 and 3 respectively then relation between p and q is:

a. $p > q$ b. $p < q$

c. $p = q$ d. p is symmetric

PYQ Nov. 19

(7) Find mode when $n = 15$ and $p = \frac{1}{4}$ in binominal distribution?

a. 4 b. 4 and 3

c. 4.2 d. 3.75

PYQ Nov. 19

(8) In a binomial distribution $B(n, p)$ $n = 4$, $P(x = 2) = 3\,P(x = 3)$ find p

a. 1/3 b. 2/3

c. 6/4 d. 4/3

PYQ Nov. 20

(9) If the probability of success in a binomial distribution is less than one-half, then the binomial distribution_____.

a. is skewed to left

b. is skewed to right

c. has two modes

d. has median at a point > mean + 1/2

Note: Skewness is out of syllabus

PYQ Jan. 21

(10) A coin with probability for heads as $\frac{1}{5}$ is tossed 100 times. The standard deviation of the number of head 5 turned up is.

a. 3 b. 2

c. 4 d. 6

PYQ July 21

(11) If x is a binominal variate with $p = 1/3$, for the experiment of 90 trials, then the standard deviation is equal to:

a. $-\sqrt{5}$ b. $\sqrt{5}$

c. $2\sqrt{5}$ d. $\sqrt{15}$

PYQ Dec. 21

(12) Four unbiased coins are tossed simultaneously. The expected number of heads is:

a. 1 b. 2

c. 3 d. 4

PYQ June 22

(13) For a binomial distribution, there my be -

a. One mode b. Two mode

c. Multi mode d. No mode

PYQ Dec 22

(14) The standard deviation of binomial distribution is:

a. npq b. $\sqrt{npq}$

c. np d. $\sqrt{np}$

PYQ Jun 23

(15) The incidence of skin diseases in a chemical plant occurs in such a way that the workers have 20% chance of suffering from it. What is the probability that out of 6 workers 4 or more will have skin diseases?

a. 0.1696 b. 0.01696

c. 0.1643 d. 0.01643

Answer Key

1	c	2	a	3	d
4	d	5	d	6	b
7	b	8	a	9	a
10	c	11	c	12	b
13	c	14	b	15	b

Binomial Distribution

Mock Test Paper Questions

MTP May 18

(1) When 'p' = 0.5, the

a. Asymmetrical. b. Symmetrical

c. Both of above. d. None of these

MTP May 18

(2) If mean and standard deviation of a binomial distribution is 10 and 4 respectively; q will be

a. 0.4 b. 0.44

c. 40 d. 0.16

MTP May 18

(3) The mean of Binomial Distribution is 4 and the Standard Deviation $\sqrt{3}$ what is the value of p.

a. 1/3 b. 1/4

c. 1/5 d. 3/4

MTP Nov 18

(4) The mean of binomial distribution is

a. Always more than its variance

b. always equal to variance

c. less than its variance

d. always equal to Standard deviation

MTP Nov 18

(5) In Binomial Distribution the trails are ~~statistics~~

a. dependent

b. independent

c. either independent or dependent

d. none of these

MTP Nov 18

(6) If p is increased for a fixed n; the Binomial distribution shifts to the

a. Right b. Left

c. Above d. Below

Note: Skewness Topic not in syllabus.

MTP May 19

(7) A binomial distribution is

a. never symmetrical.

b. never positively skewed

c. never negatively skewed.

d. symmetrical when p = 0.5.

MTP May 19

(8) The maximum value of the variance of binomial distribution with parameters n and p is

a. n/2 b. n/4

c. np(1-p) d. 2n

MTP May 19 Series II

(9) A binomial distribution is

a. never symmetrical

b. never positively skewed

c. never negatively skewed

d. symmetrical when p = 0.5

MTP May 19 Series II

(10) The maximum value of the variance of binomial distribution with parameters n and p is

a. n/2 b. n/4

c. np(1-p) d. 2n

MTP Nov 19

(11) If x & y are two independent variables such that $x \sim B(n_1, p)$ and $y \sim B(n_2, p)$ then the parameter of $z = x+y$ is

a. $(n_1+n_2), p$ b. $(n_1-n_2), p$

c. $(n_1+n_2), 2p$ d. None of these

MTP Nov 19

(12) Five coins tossed 3200 times. The number of times 5 heads appeared is.

a. 500 b. 1200

c. 200 d. 100

MTP May 20

(13) Find the probability of a success for the binomial distribution satisfying the following relation 4 P (x = 4) = P (x = 2) and having the parameter n as six.

a. 1/3 b. 1/2
c. 1/5 d. 1/8

MTP May 20

(14) An experiment succeeds thrice as after it fails. If the experiment is repeated 5times, what is the probability of having no success at all?

a. 1/1023 b. 1/1024
c. 1/1005 d. 1/1008

MTP Nov 20

(15) The overall percentage of failures in a certain examination was 30. What is the probability that out of a group 6 candidates at least four passed the examination?

a. 0.747331
b. 0.757331
c. 0.76991
d. 0.72339

Note: Exact Ans is 0.74431

MTP Nov 20

(16) What is the probability of getting exactly 2 head in 7 tosses of a fair coin?

a. 5/64 b. 7/64
c. 7/128 d. 21/128

MTP Nov 20

(17) The Binomial Distribution for which mean = 15 and variance = 6.0 is

a. ${}^{25}C_x (3/5)^x (2/5)^{25-x}$
b. ${}^{25}C_x (2/5)^x (3/5)^{25-x}$
c. ${}^{25}C_x (2/5)^x (3/5)^{1-x}$
d. ${}^{25}C_x (3/5)^x (2/5)^{1-x}$

MTP Nov 20

(18) The SD of a binomial distribution with parameter n and p is

a. n(1-p)
b. np(1-p)
c. np
d. $\sqrt{np(1-p)}$

MTP Nov 20

(19) Bivariate Data are the data collected for

a. Two variables
b. More than to variables
c. Two variables at the same point of time
d. Two variables at different points of time

Note: From correlation regression chapter.

MTP March 21

(20) If x is binomial variate with parameter 15 and 1/3 what is the value of mode of the distribution.

a. 5 and 6 b. 5.5
c. 5 d. 6

MTP Apr 21

(21) The mean of a binomial distribution with parameter n and p is

a. n(1-p) b. np(1-p)
c. np d. $\sqrt{np(1-p)}$

MTP Apr 21

(22) The Binomial distribution n = 9 and p = 1/3 . What is the value of the variance?

a. 8 b. 4
c. 2 d. 16

MTP Apr 21

(23) If x & y are two independent variables such that $x \sim B(n_1, p)$ and $y \sim B(n_2, p)$ then the parameter of z = x+y is

a. $(n_1+n_2), p$ b. $(n_1-n_2), p$
c. $(n_1+n_2), 2p$ d. None of these

MTP Nov 21

(24) An example of a bi-parametric discrete Probability distribution is

a. Binomial distribution
b. Poisson Distribution
c. Normal Distribution
d. branch accounting

PYQ Nov 19, MTP Nov 21

(25) In a Binomial Distribution B (n, p), n= 4, then P (x=2) = 3 P (x= 3) find P

a. 1/3 b. 2/3
c. 6/4 d. 4/3

MTP Oct 21

(26) The variance of a binomial distribution with parameters n and p is

a. $np^2(1-p)$ b. $\sqrt{np\ (1-p)}$
c. $np\ (1-q)$ d. $n^2p^2(1-p)^2$

MTP March 22

(27) What is the probability of getting 3 heads if 6 unbiased coins are tossed simultaneously?

a. 0.3125 b. 0.25
c. 0.6825 d. 0.50

MTP March 22

(28) The mode of the binomial distribution for which the mean is 4 variance 3 is equal to ?

a. 4 b. 4.5
c. 4.25 d. 4.1

MTP March 22

(29) If a variate x has , mean>variance , then the distribution will be ____

a. Binomial Distribution
b. Poisson Distribution
c. Normal Distribution
d. T-Distribution

MTP June 22

(30) In a Binomial distribution $n = 9$ and $p = 1/3$. What is the value of Variance.

a. 8 b. 4
c. 2 d. 16

MTP Dec 22 – Series I

(31) ☆ Examine the validity of the following: Mean and standard deviation of a binomial distribution are 10 and 4 respective:

a. Not Valid b. Valid
c. Both A and B d. Neither A nor B

MTP Dec 22 – Series I

(32) ☆ The probability of a man hitting the target is 1/4. If he fires 7 times, the probability of hitting the target at least twice is :

a. $1-\left[\frac{5}{2}\right]\left[\frac{3}{4}\right]^6$ b. $1-\frac{15}{2}\left[\frac{3}{4}\right]^6$
c. $1-\frac{5}{6}, 3^5$ d. $1-\left[\frac{3}{4}\right]^6$

MTP Dec 22 Series II

(33) If mean and variance are 5 and 3 respectively then relation between p and q is :

a. $p > q$ b. $p < q$
c. $p = q$ d. p is symmetric

MTP Dec 22 Series II

(34) If a coin is tossed 5 times then the probability of getting Tail and Head occurs alternatively is:

a. 1/8 b. 1/16
c. 1/32 d. 1/64

MTP Dec 22 Series II

(35) The probability that a student is not a swimmer is 1/5 , then the probability that out of five students four are swimmers is:

a. $\left(\frac{4}{5}\right)^5\left(\frac{1}{5}\right)$ b. ${}^5C_1\left(\frac{1}{5}\right)^4\left(\frac{4}{5}\right)$
c. ${}^5C_4\left(\frac{4}{5}\right)^4\left(\frac{1}{5}\right)$ d. None of these

MTP June 2023 Series I

(36) The Standard Deviation of Binomial distribution is:

a. npq b. $\sqrt{npq}$
c. np d. $\sqrt{np}$

Answer Key

1	b	2	a	3	b
4	a	5	b	6	a
7	d	8	b	9	d
10	b	11	a	12	d
13	a	14	b	15	a
16	d	17	a	18	d
19	c	20	c	21	c
22	c	23	a	24	a
25	a	26	c	27	a
28	a	29	a	30	c
31	a	32	a	33	b
34	b	35	c	36	b

Poisson Distribution

Past Year Questions

PYQ May 18

(1) X is a Poisson variate satisfying the following condition $9P(X = 4) + 90(X = 6) = P(X = 2)$.

☆ What is the value of $P(X \leq 1)$?

a. 0.5655 b. 0.6559
c. 0.7358 d. 0.8201

Note: Extra lengthy

PYQ Nov. 18

(2) For a Poisson variate X, $P(X = 2) = 3P(X = 4)$, then the standard deviation of X is

a. 2 b. 4
c. $\sqrt{2}$ d. 3

PYQ June 19

(3) ☆ 4 coins were tossed 1600 times. What is the probability that all 4 coins do not turn head upward at a time?

a. $1600\ e^{-100}$ b. $1000\ e^{-100}$
c. $100\ e^{-1600}$ d. e^{-100}

PYQ June 19

(4) In a Poisson distribution if $P(x = 4) = P(x = 5)$ then the parameter of Poisson distribution is:

a. $\frac{4}{5}$ b. $\frac{5}{4}$

c. 4 d. 5

PYQ Nov. 19

(5) For a poisson distribution:

a. mean and SD are equal

b. mean and variance are equal

c. SD and variance

d. Both (a) and (b)

PYQ Nov. 19

(6) In poisson distribution, if $P(x = 2) = \frac{1}{2} P(x = 3)$ find m?

a. 3 b. 1/6

c. 6 d. 1/3

PYQ Nov. 20

(7) Which of the following is uni-parametic distribution?

a. Poisson

b. Normal

c. Binominal

d. Hyper geometric

PYQ Nov. 20

(8) Which one of the following has Poisson distribution?

a. The number of days to get a complete cure.

b. The number of defects per meter on long roll of coated polythene sheet.

c. The errors obtained in repeated measuring of the length of a rod.

d. The number of claims rejected by an insurance agency.

PYQ Nov. 20

(9) For a Poisson distributed variable X, we have $P(X = 7) = 8\ P(X = 9)$, the mean of the distribution is:

a. 3 b. 4

c. 7 d. 9

PYQ Nov. 20

(10) If the parameter of Poisson distribution is m and (Mean + S.D.) = 6/25 then find m:

a. 3/25 b. 1/25

c. 4/25 d. 3/5

PYQ Jan. 21

(11) If x is a Poisson variable and $P(x = 1) = P(x = 2)$, then $P(x = 4)$ is

a. $\frac{2}{3}e^{-2}$ b. $\frac{2}{3}e^{4}$

c. $\frac{3}{2}e^{-2}$ d. $\frac{3}{2}e^{4}$

PYQ Jan. 21

(12) Which one of the following is an uniparametric distribution?

a. Poisson

b. Normal

c. Binomial

d. Hyper geometric

PYQ July 21

(13) It is Poisson variate such that $P(x = 1) = 0.7$, $P(x = 2) = 0.3$, then $P(x = 0) =$

☆ a. $e^{6/7}$ b. $e^{-6/7}$

c. $e^{-2/3}$ d. $e^{-1/3}$

PYQ Dec. 21

(14) The average number of advertisements per page appearing in a newspaper is 3. What is the probability that in a particular page zero number of advertisements are there?

a. e^{-3} b. e^{0}

c. e^{+3} d. e^{-1}

PYQ Dec. 21

(15) If, for a Poisson distributed random variable x, the probability for x taking value 2 is 3 times the probability for x taking value 4, then the variance of x is

a. 4 b. 3

c. 2 d. 5

PYQ Dec. 21

(16) The manufacturer of a certain electronic component is certain that 2% of his product is defective. He sells the components in boxes of 120 and guarantees that not more than 2% in any box will be defective. Find the probability that a box, selected at random would fail to meet the guarantee? (Given that $e^{-2.4} = 0.0907$)

a. 0.49 b. 0.39

c. 0.37 d. 0.43

PYQ Dec. 21

(17) A renowned hospital usually admits 200 patients everyday. One percent patients, on an average, require special room facilities. On one particular morning, it was found that only one special room is available. What is the probability that more than 3 patients would require special room facilities?

a. 0.1428 b. 0.1732
c. 0.2235 d. 0.3450

PYQ June 22

(18) If Standard Deviation is 1.732 then what is the value of poisson distribution. The P (-2.48 < x < 3.54) is

a. 0.73 b. 0.65
c. 0.86 d. 0.81

PYQ Dec 22

(19) If a poisson distribution is such that $P(X = 2) = P(X = 3)$ then the variance of the distribution is:

a. $\sqrt{3}$ b. 3
c. 6 d. 9

PYQ Jun 23

(20) Between 9 AM and 10 AM, the average number of phone calls per minute coming into the switchboard of a company is 4. Find the probability that during one particular minute, there will be either 2 phone calls or no phone calls (given $e^{-4} = 0.018316$)

a. 0.156 b. 0.165
c. 0.149 d. 0.194

PYQ Jun 23

(21) If a Poisson distribution is such that $P(X = 2) = \frac{1}{3} P(X = 3)$, then the standard deviation of the distribution is:

a. $\sqrt{3}$ b. 3
c. 2 d. 1

Answer Key

1 c	2 c	3 d
4 d	5 b	6 c
7 a	8 b	9 a
10 b	11 a	12 a
13 b	14 a	15 c
16 d	17 a	18 b
19 b	20 b	21 b

Poisson Distribution

Mock Test Paper Questions

MTP May 18

(1) Which one is not a condition of Poisson model

a. the probability of having failures in a small time interval is constant
b. the probability of having success more than one in a small time interval is very small
c. the probability of having success in this time interval is independent of time 't' as well as earlier success
d. the probability of having success in a small time interval (t, t+td) is Kt for a positive constant k.

MTP May 18

(2) In ____ distribution, mean = variance.

a. Normal b. Binomial
c. Poisson d. None of these

MTP May 19 Series II

(3) Which one is uniparametric distribution?

a. Binomial b. Poisson
c. Normal d. Hyper Geometric

MTP Nov 19

(4) Find the probability that at least 5 defective bolts will be found in a box of 200 bolts. If it is known that 2% of such bolts are expected to be defective (Given: $e^{-4} = 0.0183$)

a. 0.4717 b. 0.3717
c. 0.3017 d. None of these

MTP May 20

(5) Number of misprints per page of a thick book follows

a. Normal distribution
b. Poisson distribution
c. Binomial distribution
d. Standard normal distribution

MTP May 20

(6) If for a Poisson variable X, $f(2) = 3 f(4)$, what is the variance of X?

a. 2 b. 4
c. $\sqrt{2}$. d. 3

MTP Nov 20

(7) If $P(X=2) = P(X=3)$ for a Poisson Variate X, then E(x) is

☆ a. 2 b. 3
c. 1 d. None of these

MTP March 21

(8) In Poisson distribution which of the following is same.

a. Mean and variance
b. Mean and SD
c. Both (a) & (b)
d. None of these

MTP Nov 21

(9) Number of defects in clothes a garments showroom will form a

a. Poisson distribution
b. Normal distribution
c. Binomial distribution
d. Cannot be determined

MTP Nov 21

(10) In a certain Poisson frequency distribution, the probability corresponding to two success is half the probability corresponding to three successes. The mean of the distribution is

a. 6 b. 12
c. 3 d. 2.45

MTP Oct 21

(11) For a Poisson variate X, $P(X = 1) = P(X = 2)$. What is the mean of X?

a. 1.00 b. 1.50
c. 2.00 d. 2.50

MTP Oct 21

(12) For a Poisson distribution,

a. mean and standard deviation are equal
b. mean and variance are equal.
c. standard deviation and variance are equal.
d. both (a) and (b).

MTP March 22

(13) For Poisson Distribution :

a. Mean and Standard Deviation are equal
b. Mean and Variance are equal
c. Standard Deviation and Variance are equal
d. Both (a) and (b) are equal

MTP March 22

(14) For a Poisson variate X, $P(x=2) = 3\,P(x=4)$, then the standard deviation of X is

a. 2 b. 4
c. $\sqrt{2}$ d. 3

MTP June 22

(15) If x be a poisson variates with parameter 1; then find $P(3<X<5)$ (Given $e^{-1} = 0.36783$)

a. 0.015326 b. 0.15326
c. 0.012326 d. None of these

MTP June 22

(16) In a Poisson Distribution $P(x=0) = P(x=2)$. Find E(x)

a. $\sqrt{2}$ b. 2
c. -1 d. 0

MTP June 22

(17) Name of the distribution which has Mean= Variance

a. Binomial b. Poisson
c. Normal d. (a) and (b)

MTP Dec 22 – Series I

(18) If 5% of the electric bulbs manufactured by a company are defective, use Poisson distribution to find the probability that in a sample of 100 bulbs, 5 bulbs will be defective. [Given : $e^{-5} = 0.007$]

a. 0.1823 b. 0.1723
c. 0.1623 d. 0.1923

MTP Dec 22 – Series I

(19) For a Poisson variate X, $P(x=1) = P(x=2)$, what is the mean of x?

a. 1 b. 3/2
c. 2 d. 5/2

MTP Dec 22 Series II

(20) In a Poisson distribution if $P(x=4) = P(x=5)$ then the parameter of Poisson distribution is:

a. 4/5 b. 5/4
c. 4 d. 5

MTP June 2023 Series I

(21) If Poisson distribution is such that $P(X = 2) = P(X = 3)$ then the Standard Deviation of the distribution is

a. $\sqrt{3}$ b. 3
c. 6 d. 9

MTP June 2023 Series II

(22) To find the distribution of number of airplanes crashing every hour in the world, which of the following distribution is appropriate to apply:
- a. Normal distribution
- b. Binomial distribution
- c. Poisson distribution
- d. Using any of the above will yield the same output

MTP June 2023 Series II

(23) The mean and variance are equal for which of the following:
- a. Poisson Distribution
- b. Normal Distribution
- c. Gaussian Distribution
- d. None of these

MTP June 2023 Series II

(24) For the Poisson distribution:
- a. Events are independent of each other
- b. Average rate (events per time period) is constant
- c. Two events cannot occur simultaneously
- d. All of the above

Answer Key

1	a	2	c	3	b
4	b	5	b	6	a
7	b	8	a	9	a
10	a	11	c	12	b
13	b	14	c	15	a
16	a	17	b	18	a
19	c	20	d	21	a
22	c	23	a	24	d

Normal Distribution

Past Exam Papers

PYQ May 18

(1) What is the first quartile of x having the following probability density function?

$$f(X)=\frac{1}{\sqrt{72\pi}}e^{-(x-10)^2/72} \text{ for } -\alpha<x<\alpha$$

a. 4 b. 5
c. 5.95 d. 6.75

PYQ May 18

(2) If the area of standard normal curve between z = 0 to z = 1 is 0.3412, then the value of ϕ (1) is

a. 0.5000 b. 0.8413
c. - 0.5000 d. 1

PYQ Nov. 18

(3) If for a normal distribution $Q_1 = 54.52$ and $Q_3 = 78.86$, then the median of the distribution is

a. 12.17 b. 39.43
c. 66.69 d. None of these

PYQ Nov. 18

(4) What is the mean of X having the following density function?

$$f(x)=\frac{1}{4\sqrt{2\pi}}.e^{\frac{-(x-10)^2}{32}} \text{ for } -\infty<x<\infty$$

a. 10 b. 4
c. 40 d. None of these

PYQ June 19

(5) Area between = 1.96 to + 1.96 in a normal distribution is:

☆ a. 95.45% b. 95%
c. 96% d. 99%

PYQ June 19

(6) If the points of inflextion of a normal curve are 40 and 60 respectively, then its mean deviation is:

a. 8 b. 45
c. 50 d. 60

PYQ Nov. 19

(7) Area under $\mu \pm 3\sigma$

a. 99.73% b. 99%
c. 100% d. 99.37%

PYQ Nov. 19

(8) What is the mean and SD

x if $f(x)=\frac{\sqrt{2}}{\sqrt{\pi}}e^{-2(x-3)^2}, -\infty<x<\infty.$

a. $3,\frac{1}{2}$ b. $3,\frac{1}{4}$
c. $2,\frac{1}{2}$ d. $2,\sqrt{2}$

PYQ Nov. 20

(9) If we change the parameter(s) of a _____ distribution the shape of probability curve does not change.
- a. Normal
- b. Binominal
- c. Poisson
- d. Non-Gaussian

PYQ Nov. 20

(10) The quartile deviation of a normal distribution with mean 10 and standard deviation 4 is_____.

a. 54.24 b. 23.20
c. 0.275 d. 2.70

PYQ Jan. 21

(11) For a normal distribution, the value of third moment about mean is.

a. 0 b. 1
c. 2 d. 3

Note: Not in syllabus

PYQ July 21

(12) In normal distribution, Mean, Median and Mode are:

a. Zero b. Not Equal
c. Equal d. Null

PYQ July 21

(13) For a certain type of mobile, the length of time between charges of the battery is normally distributed with a mean of 50 hours and a standard deviation of 15 hours. A person owns one of these mobiles and want to know the probability that the length of time will be between 50 and 70 hours is (given $\varphi(1.33)) = 0.9082, \varphi(0) = 0.5$)?

a. - 0.4082 b. 0.5
c. 0.4082 d. - 0.5

PYQ Dec. 21

(14) Let x be normal distribution with mean 2.5 and variance 1. If $P(a < x < 2.5) = 0.4772$ and that the cumulative normal probability value at 2 is 0.9772, then a = ?

a. 0.5 b. 3
c. - 3.5 d. - 4.5

PYQ June 22

(15) In a normal distribution, variance is 16 then the value of mean deviation is.

a. 4.2 b. 3.2
c. 4.5 d. 2.5

PYQ Dec 22

(16) Skewness of Normal Distribution is:

a. Negative b. Positive
c. Zero d. Undefined

PYQ Dec 22

(17) The speeds of a number of bikes follow a normal distribution model with a mean of 83 km/hr and a standard deviation of 9.4 km/hr. Find the probability that a bike picked at random is travelling at more than 95km/hr.? Given P(Z>1.28)=0.1003

a. 0.1003 b. 0.38
c. 0.49 d. 0.278

Answer Key

1 c	2 b	3 c
4 a	5 b	6 a
7 a	8 a	9 a
10 d	11 a	12 c
13 c	14 a	15 b
16 c	17 a	

Normal Distribution

Mock Test Paper Questions

MTP May 18

(1) The quartile deviation of a normal distribution with mean 10 and standard deviation 4 is

a. 0.675 b. 67.50
c. 2.70 d. 3.20

MTP May 18

(2) If the quartile deviation of a normal curve is 4.05, then its mean deviation is

a. 5.26 b. 6.24
c. 4.24 d. 4.80

MTP May 18

(3) In a normal distribution skewness is ___

a. 0 b. > 3
c. < 3 d. < 1

MTP May 18

(4) The points of inflexion of the normal curve $f(t) = \frac{1}{4\sqrt{2x}} e^{\frac{-(t-10)^2}{32}}$ are

a. 6, 14 b. 5, 15
c. 4, 16 d. None of these

MTP Nov 18

(5) If X and Y are independent normal Variables with mean 100 and 80 respectively and standard deviation as 4 and 3 respectively. What is the distribution of (X+Y)?

a. 180, 5 b. 180, 25
c. 90, 5 d. 180, 0

Note: Que is silent about finding SD or Variance – ideally it should be Variance but answer as per the ICAI MTP is of SD.

MTP Nov 18

(6) If X is normal variate with mean 6 and variance 16 then the value of the probability. P(2≤x≤10) is equal to.

☆
a. $2P(2 \le x \le 10)$
b. $2P(6 \le X \le 10)$
c. $P(0 \le x \le 6)$
d. $3P(6 \le x \le 10)$

MTP May 19

(7) The total area of the normal curve is
a. One
b. 50 percent
c. 0.50
d. Any value between 0 and 1

MTP May 19

(8) If the mean deviation of a normal variable is 16, what is its quartile deviation?
a. 10.00 b. 13.50
c. 15.00 d. 12.05

MTP May 19

(9) If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is
a. 40 b. 45
c. 50 d. 60

Note: Correct Ans is 8

MTP May 19

(10) For Poisson fitting to an observed frequency distribution
a. we equate the Poisson parameter to the mean of the frequency distribution
b. we equate the Poisson parameter to the median of the distribution.
c. we equate the Poisson parameter to the mode of the distribution
d. none of these

MTP May 19 Series II

(11) The mean deviation about median of a standard normal variate is
a. 0.675 σ b. 0.675
c. 0.80 σ d. 0.80

MTP May 19 Series II

(12) If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is
a. 8 b. 45
c. 50 d. 60

MTP May 19 Series II

(13) What is the first quartile of X having the following probability density function?

$$f(t) = \frac{1}{4\sqrt{72\pi}} e^{\frac{-(x-10)^2}{72}} \quad \text{for } -\infty < x < \infty$$

a. 4 b. 5
c. 5.95 d. 6.75

MTP Nov 19

(14) For the normal distribution density function $f(x) = k.e^{\frac{(x^2-6x+9)}{8}}$, the mean and variance are.
a. 2:3 b. 3:2
c. 4:5 d. 3:4

Note: Ans in ICAI MTP is wrong

MTP Nov 19

(15) The mean deviation of normal distribution is 16. The Quartile Deviation is

☆
a. 40/3 b. 20/3
c. 100/3 d. 50/3

MTP Nov 19

(16) The Quartile Deviation of the normal distribution $f(x) = \frac{1}{\sqrt{18\pi}} e^{\frac{-(x-10)^2}{18}}, -\infty < x < \infty$

☆
a. 3 b. 4/3
c. 2 d. 3/4

MTP Nov 19

(17) If x and y are two independent normal random distributions with mean and SD's are (10, 5) and (15, 12) these mean and SD of (x+y) is.
a. (27, 15) b. (10, 27)
c. (25,13) d. (12,25)

MTP May 20

(18) If the two quartiles of a normal distribution are 47.30 and 52.70 respectively, what is the mode of the distribution? Also find the mean deviation about median of this distribution.
a. 3.80 b. 3.40
c. 3.20 d. 4.20

MTP May 20

(19) X follows normal distribution with mean as 50 and variance as 100. What is P(x≥ 60)? [Given φ(1) = 0.8413]
a. 0.20 b. 0.40
c. 0.16 d. 0.30

MTP May 20

(20) If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is

a. 40 b. 45
c. 50 d. 60

Note: Correct Ans is 8

MTP Nov 20

(21) The total area of the normal curve is

a. One
b. 50 per cent
c. 0.50
d. Any value between 0 and 1

MTP Nov 20

(22) The mean and mode of the normal distribution

a. May be equal
b. May be different
c. Are always equal
d. (a) or (b)

MTP March 21

(23) Area covered normal curve by $\mu \pm 3\sigma$

a. 68.28% b. 95.96%
c. 99.73% d. 99.23%

MTP March 21

(24) The Quartile Deviation of Normal Distribution with mean is 10 and variance is 16 is

a. 54.24 b. 23.20
c. 0.275 d. 2.70

MTP Apr 21

(25) The total area of the normal curve is

a. One
b. 50%
c. 0.50
d. Any value between 0 and 1

MTP Apr 21

(26) For a normal distribution with mean 150 and SD is 45, Find Q1 and Q3

a. 119.35,190.65 b. 119.65,180.35
c. 180.35,119.65 d. 123.45,183.65

MTP Nov 21

(27) The normal curve is

a. Positively skewed
b. Negatively skewed
c. Symmetrical
d. All these

MTP Nov 21

(28) For a normal distribution Q1 = 54.32 and Q3 = 78.86, then the median of the distribution is

a. 12.17 b. 39.43
c. 66.59 d. None of these

MTP Nov 21

(29) What is the mean of X having the following density function $f(x) = \frac{1}{4\sqrt{2\pi}} e^{\frac{(x-10)^2}{32}}$ for $-\infty < x < \infty$

a. 10 b. 4
c. 40 d. None of these

MTP Oct 21

(30) What is the first quartile of X having the following probability density function?

$F(x) = \frac{1}{\sqrt{72\pi}} e^{\frac{(x-10)^2}{72}}$ for $-\infty < x < \infty$

a. 4 b. 5
c. 5.95 d. 6.75

MTP Oct 21

(31) If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is

a. 40 b. 45
c. 50 d. 60

Note: Correct ans is 8

MTP Oct 21

(32) If X follows normal distribution with $\mu = 50$ and $\sigma = 10$, what is the value of

☆ $P(x \le 60 / x > 50)$?

a. 0.8413 b. 0.6828
c. 0.1587 d. 0.7256

MTP Oct 21

(33) For a normal distribution with mean as 500 and SD as 120, what is the value of k so that the interval [500, k] covers 40.32 per cent area of the normal curve? [Given $\varphi(1.30) = 0.9032$.]

a. 740 b. 750
c. 656 d. 800

MTP Oct 21

(34) If the mean deviation of a normal variable is 16, what is its quartile deviation?

a. 10.00. b. 13.50
c. 15.00. d. 12.05.

MTP March 22

(35) An example of a bi-parametric continuous probability distribution
a. Binomial
b. Poisson
c. Normal
d. Chi-square

MTP March 22

(36) What is the mean of X having the following density function ?

$$f(x)=\frac{1}{4\sqrt{2\pi}}e^{\frac{(x-10)^2}{32}} \quad for -\infty < x < \infty$$

a. 10 b. 4
c. 40 d. None of these

MTP June 22

(37) The variance of standard normal distribution is
a. 1 b. 0
c. σ^2 d. 0

MTP Dec 22 – Series I

(38) For a normal distribution, the first and third quartile are given to be 37 and 49, the mode of the distribution is.
a. 37 b. 49
c. 43 d. 45

MTP Dec 22 – Series II

(39) What is the mean of X having the following density function?

$$f(x)=\frac{1}{4\sqrt{2\pi}}e^{\frac{(x-10)^2}{32}} \quad for -\infty < x < \infty$$

a. 4 b. 10
c. 40 d. None of these

Note: Ans is wrong in ICAI MTP

MTP Dec 22 Series II

(40) Area between -1.96 to +1.96 in a normal distribution is :
a. 95.45% b. 95%
c. 96% d. 99%

MTP June 2023 Series I

(41) Skewness of Normal Distribution is –
a. Negative b. Positive
c. Zero d. Undefined

MTP June 2023 Series I

(42) The speeds of bikes follow a normal distribution model with a mean of 80 km/hr. and a standard deviation of 9.4 km/hr. Find the probability that a bike picked at random is travelling at more than 95 km/hr.?

$[P(z)=P(1.60)=0.4452]$

a. 0.0548 b. 0.38
c. 0.49 d. 0.278

MTP June 2023 Series II

(43) Which of the following is not a property of normal distribution?
a. There are two points of inflexion.
b. Mean, median and mode coincide for normal distribution
c. Skewness is zero
d. All the above

MTP June 2023 Series I

(44) For a continuous random variable following standard normal distribution, what is the value of standard deviation?
a. 1 b. 0
c. - 1 d. More than 1

MTP June 2023 Series I

(45) If the inflexion points of a normal distribution are 6 and 14. Find its Standard Deviation
a. 4 b. 6
c. 10 d. 12

MTP June 2023 Series II

(46) Normal distribution is also known as
a. Gaussian distribution
b. Binomial distribution
c. Poisson distribution
d. None of these

Answer Key

1	c	2	d	3	a
4	a	5	a	6	b
7	a	8	b	9	a
10	a	11	d	12	a
13	c	14	d	15	a
16	c	17	c	18	c
19	c	20	a	21	a
22	c	23	c	24	d
25	a	26	b	27	c
28	c	29	a	30	c
31	a	32	b	33	c
34	b	35	c	36	a
37	a	38	c	39	b
40	b	41	c	42	a
43	d	44	a	45	a
46	a				

Chapter 17 – Correlation and Regression

Correlation – Scatter Diagram

Past Year Questions

PYQ May 18

(1) If the plotted points in a scatter diagram are evenly distributed, then the correlation is
a. Zero b. Negative
c. Positive d. (a) or (b)

PYQ May 18

(2) Speed of an automobile and the distance required to stop the car after applying brakes correlation is
☆ a. Positive b. Negative
c. Zero d. None of these

Note: Confusing question but ans is taken as per ICAI Study Material

PYQ May 18

(3) A relationship $r^2 = 1 - \frac{500}{300}$ is not possible
a. True b. False
c. Both (a) & (b) d. None of these

PYQ Nov. 19

(4) If the plotted points in a scatter diagram lie from upper left to lower right, then correlation is
a. Positive b. Negative
c. Zero d. None of these

PYQ Nov. 20

(5) Scatter diagram does not help us to?
a. Find the type of correlation
b. Identify whether variables correlated or not
c. Determine the linear or non-linear correlation
d. Find the numerical value of correlation coefficient

PYQ July 21

(6) If the data points of (X, Y) series on a scatter diagram lie along a straight line that goes downwards as X- values move from left to right, then the data exhibit - - - - - - - - - - - - - - - - - - correlation.
a. Direct
b. Imperfect indirect
c. Indirect
d. Imperfect direct

PYQ June 22

(7) If the plotted point in a scatter diagram lie from lower left to upper right then correction is:
a. Positive
b. Negative
c. Perfectively negative
d. Zero

PYQ June 22

(8) Scattered diagram is used to plot
a. Quantitative data
b. Qualitative data
c. Discrete data
d. Continuous data

Answer Key

1 a	2 b	3 a
4 b	5 d	6 c
7 a	8 a	

Correlation – Scatter Diagram

Mock Test Paper Questions

MTP May 19

(1) The covariance between two variables is
a. Strictly positive
b. Strictly negative
c. Always 0
d. Either positive or negative or zero.

MTP May 19 Series II

(2) Correlation analysis aims a
a. Predicting one variable for a given value of the other variable
b. Establishing relation between two variables
c. Measuring the extent of relation between two variables
d. Both (b) and (c).

MTP May 20

(3) When r = 1, all the points in a scatter diagram would lie
a. On a straight line directed from lower left to upper right
b. On a straight line directed from upper left to lower right
c. On a straight line
d. Both (a) and (b)

MTP Apr 21

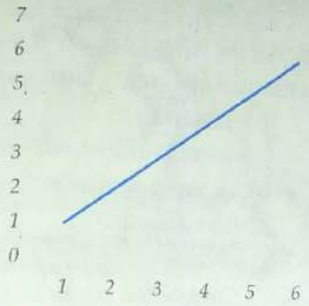
(4) Price and Demand are the example of
a. No correlation
b. Positive correlation
c. Negative correlation
d. None of these

MTP Nov 21

(5) For a 4 x 7 classification of bivariate data, the maximum number of conditional distributions is:
a. 11 b. 28
c. 35 d. None of these

MTP Nov 21

(6) Below scatter diagram shows what type of correlation



a. Perfect negative correlation
b. Negative correlation
c. Positive correlation
d. Perfect positive correlation

MTP Oct 21

(7) For a p x q classification of bivariate data, the maximum number of conditional distributions is
a. p b. p+q
c. pq d. P or q

MTP Oct 21

(8) For a p x q bivariate frequency table, the maximum number of marginal distributions is
a. p b. p+q
c. 1 d. 2

MTP March 22

(9) If the plotted points in a scatter diagram lie from upper left to lower right, then the correlation is
a. Positive b. Zero
c. Negative d. none of these.

MTP June 22

(10) For a m×n two way or bivariate frequency table, the maximum number of marginal distributions is
a. 1 b. 2
c. m+n d. mn

MTP June 2023 Series II

(11) A scatter diagram of two variables developing a pattern of multiple circular rings represents which kind of correlation?
a. Positive
b. Negative
c. Curvilinear
d. No correlation

Answer Key

1 d	2 d	3 a
4 c	5 a	6 d
7 b	8 d	9 c
10 b	11 d	

Karl Pearson Product Moment Correlation

Past Year Questions

PYQ May 18

(1) The covariance between two variables is
a. Strictly positive
b. Strictly negative
c. Always zero
d. Either positive or negative or zero

PYQ May 18

(2) Correlation coefficient is _____ of the units of measurements.
a. dependent b. independent
c. both d. none of these

PYQ Nov. 18

(3) If the correlation coefficient between the variables X and Y is 0.5, then the correlation coefficient between the variables 2x – 4 and 3 – 2y is
a. 1 b. 0.5
c. - 0.5 d. 0

PYQ June 19

(4) Given that

X	Y
-3	9
-3/2	9/4
0	0
3/2	9/4
3	9

Then Karl Pearson's coefficient of correlation is
a. Positive b. Zero
c. Negative d. None of these

PYQ June 19

(5) If the regression line of y on x is given by $y = x + 2$ and Karl Pearson's coefficient of correlation is 0.5 then $\frac{\sigma_y^2}{\sigma_x^2} =$ _____

a. 3 b. 2
c. 4 d. None of these

PYQ Nov. 19

(6) What is the coefficient of correlation from the following data?

X	Y
1	5
2	4
3	3
4	2
5	6

a. 0 b. - 0.75
c. - 0.85 d. 0.82

PYQ Nov. 20

(7) The covariance between two variables is
a. Strictly positive
b. Strictly negative
c. Always zero
d. Either positive or negative or zero

PYQ Jan. 21

(8) For the set of observations $\{(1,2),(2,5),(3,7),(4,8),(5,10)\}$ the value of Karl-person's coefficient of correlation is approximately given by
a. 0.755 b. 0.655
c. 0.525 d. 0.985

PYQ Jan. 21

(9) The coefficient of correlation between x and y is 0.5 the covariance is 16, variance of x is 16 then standard deviation of y is
a. 4 b. 8
c. 16 d. 64

PYQ July 21

(10) ☆ If the sum of the product of the deviations of X and Y from their means is zero the correlation coefficient between X and Y is:
a. Zero b. Positive
c. Negative d. 10

PYQ July 21

(11) ☆ The sum of square of any real positive quantities and its reciprocal is never less than:
a. 4 b. 2
c. 3 d. 4

Note: Remember this as a property

PYQ June 22

(12) ☆ Karl Pearson Correlation Coefficient method is used for -
a. Any data
b. Scattered data
c. Grouped data
d. Ungrouped data

PYQ June 22

(13) Which of the following is used to find correlation between two qualitative characteristics
a. Karl Pearson
b. Spearman rank correlation
c. Concurrent deviation
d. Scatter diagram

PYQ Dec 22

(14) Pearson's Correlation coefficient between x and y is :-
a. $\frac{cov(x,y)}{S_x S_y}$ b. $\frac{cov^2(x,y)}{S_x S_y}$
c. $\frac{(S_x S_y)^2}{cov(x,y)}$ d. $\frac{S_x S_y}{cov(x,y)}$

Answer Key

1 d	2 b	3 c
4 b	5 c	6 a
7 d	8 d	9 b
10 a	11 b	12 a
13 b	14 a	

Karl Pearson Product Moment Correlation

Mock Test Paper Questions

MTP May 18

(1) Correlation Co-efficient is _____ of the units of measurements
a. Independent b. Dependent
c. Both d. none of these

MTP May 18

(2) If for two variable x and y, the covariance, variance of x and variance of y are 40, 16 and 256 respectively, what is the value of the correlation coefficient?

a. 0.01 b. 0.625
c. 0.4 d. 0.5

MTP Nov 18

(3) The correlation coefficient between x and y is 0.8, the correlation coefficient between u and v are $2u + x + 4 = 0$ and $4v + 16y + 11 = 0$

a. $r = 0.8$ b. $r = -0.8$
c. $r = 0$ d. $r = \pm 1$

MTP Nov 18

(4) If the relation between two variables x and y in given by $2x+3y+4=0$, then the Value of the correlation coefficient between x and y is

a. 0 b. 1
c. -1 d. Negative

MTP May 20

(5) If for two variable x and y, the covariance, variance of x and variance of y are 40, 16 and 256 respectively, what is the value of the correlation coefficient?

a. 0.01 b. 0.625
c. 0.4 d. 0.5

MTP May 20

(6) If the relation between x and u is $3x + 4u + 7 = 0$ and the correlation coefficient between x and y is -0.6, then what is the correlation coefficient between u and y?

a. –0.6 b. 0.8
c. 0.6 d. –0.8

MTP Nov 20

(7) When $r = 0$ then $cov(x,y)$ is equal to

☆ a. + 1
b. - 1
c. 0
d. None

MTP March 2021

(8) Correlation coefficient r, b_{xy} and b_{yx} are all have ___ signs

a. Different b. Same
c. Both d. None

MTP March 2021

(9) The covariance between two variables is

a. Strictly positive
b. Strictly negative
c. Always zero
d. Either positive or negative or zero

MTP Apr 21

(10) The correlation coefficient (r) is the _____of the two regression coefficients

a. AM b. GM
c. HM d. Median

MTP Apr 21

(11) The coefficient of correlation between x and y is 0.6. If x and y values are multiplied by -1, then coefficient of correlation will be

a. -0.6 b. 1/0.6
c. 0.6 d. 0.4

MTP Nov 21

(12) There are two equations: $m + 3p = 2$ and $6n + 2q = 1$. Correlation coefficients for p and q is 0.5. Find the correlation coefficients of m and n

a. 0.6 b. 0.5
c. -0.5 d None of these

MTP Oct 21

(13) If the covariance between two variables is 20 and the variance of one of the variables is 16, what would be the variance of the other variable?

a. $s_y^2 \geq 25$ b. More than 10
c. Less than 10 d. More than 1.25

MTP March 22

(14) The covariance between two variables is

a. Strictly positive
b. Strictly negative
c. Always 0
d. Either positive or negative or zero.

MTP March 22

(15) The covariance between two variables X and Y is 8.4 and their variances are 25 and 36 respectively. Calculate Karl Pearson's coefficient of correlation between them.

a. 0.82 b. 0.28
c. 0.01 d. 0.09

MTP Dec 22 – Series I

(16) If correlation co-efficient r between x and y is 0.5 then r between x and –y is

☆ a. 1 b. 0.5
c. -0.5 d. 0

MTP Dec 22 Series II

(17) The covariance between two variables is
- a. Strictly positive
- b. Strictly negative
- c. Always 0
- d. Either positive or negative or zero.

Answer Key

1	a	2	b	3	a
4	c	5	b	6	c
7	c	8	b	9	d
10	b	11	c	12	b
13	a	14	d	15	b
16	c	17	d		

Spearman Rank Correlation

Past Exam Paper Questions

PYQ May 18

(1) Rank correlation coefficient lies between
- a. 0 to 1
- b. -1 to +1 inclusive of these value
- c. -1 to 0
- d. Both

PYQ June 19

(2) ☆ Given the following series:

X	10	13	12	15	8	15
Y	12	16	18	16	7	18

The rank correlation coefficient r =

a. $1-\frac{6\sum d^2+\sum_{i-1}^{2}\frac{m_1(m_i^2-1)}{12}}{n(n^2-1)}$

b. $1-\frac{6\left[\sum d^2+\sum_{i-1}^{2}\frac{m_1(m_i^2-1)}{12}\right]}{n(n^2-1)}$

c. $1-6\sum d^2+\sum_{i=1}^{2}\frac{m_1(m_i^2-1)}{12}}{n(n^2-1)}$

d. $1-6\sum d^2+\sum_{i=1}^{3}\frac{m_1(m_i^2-1)}{12}}{n(n^2-1)}$

PYQ June 19

(3) Determine Spearman's rank correlation coefficient from the given data $\sum d^2=30, n=10$:
- a. r = 0.82
- b. r = 0.32
- c. r = 0.40
- d. None of these

PYQ Dec 22

(4) The coefficient of rank correlation between the ranking of following 6 students in two subjects Mathematics and Statistics is:

Mathematics	Statistics
3	6
5	4
8	9
4	8
7	1
10	2

- a. - 0.25
- b. - 0.35
- c. - 0.38
- d. - 0.20

PYQ Jun 23

(5) Spearman's rank correlation coefficient r_R is given by
- a. $1-\frac{6\sum d_i^2}{n(n^2+1)}$
- b. $1+\frac{6\sum d_i^2}{n(n^2-1)}$
- c. $1+\frac{6\sum d_i^2}{n(n^2+1)}$
- d. $1-\frac{6\sum d_i^2}{n(n^2-1)}$

Answer Key

1	b	2	b	3	a
4	a	5	d		

Spearman Rank Correlation

Mock Test Paper Questions

MTP May 19

(1) If the sum of squares of difference of ranks, given by two judges A and B of 8 students in 21, what is the value of rank correlation coefficient?
- a. 0.7
- b. 0.65
- c. 0.75
- d. 0.8

MTP Nov 18

(2) ☆ If three Judges appointed for a beauty competition, then how many different rank correlation coefficients are required to analyse the judge competition.
- a. 3
- b. 1

c. 2 d. 6

MTP March 21

(3) If the sum of squares in difference of ranks, given by two judges A and B of 8 students is 21, What is the value of rank correlation coefficient?

a. 0.7 b. 0.65
c. 0.75 d. 0.8

MTP June 22

(4) In a bivariate distribution if the rank correlation coefficient $r = 0.12$; $\Sigma d^2 = 146$; Then the no. of observed pairs (N) is

a. 9 b. 8
c. 7 d. 10

MTP June 2023 Series I

(5) The coefficient of rank correlation between the ranking of following 6 students in two subjects Mathematics and Statistics is:

Mathematics	Statistics
3	6
5	4
8	9
4	8
7	1
10	2

a. - 0.26 b. 0.35
c. 0.38 d. 0.20

Answer Key

1 c 2 a 3 c
4 d 5 a

Correlation: Concurrent Deviation

Past Exam Paper Questions

PYQ May 18

(1) In the method of Concurrent Deviations, only the directions of change (Positive direction/Negative direction) in the variables are taken into account for calculation of

a. Coefficient of SD
b. Coefficient of regression
c. Coefficient of correlation
d. None of these

PYQ June 22

(2) ☆ If concurrent coefficient is $1/\sqrt{3}$ and number of concurrent deviation is 6 for n pairs of data. Find total number of pairs?

a. 9 b. 8
c. 10 d. 11

Answer Key

1 c 2 c

Correlation: Concurrent Deviation

Mock Test Paper Questions

MTP May 18

(1) Standard Error of Correlation coefficient

☆ a. $\frac{1-r^2}{\sqrt{N}}$

b. $\frac{1+r^2}{\sqrt{N}}$

c. $\frac{1+r^2}{N}$

d. $\frac{1-r}{N}$

MTP May 18

(2) Probable Error can be obtained using Correlation coefficient as

a. $0.675 \times \frac{1-r^2}{\sqrt{N}}$

b. $\frac{2}{3} \times \frac{1+r^2}{\sqrt{N}}$

c. $\frac{1+r^2}{N}$

d. $\frac{1-r^2}{N}$

MTP May 19

(3) What is spurious correlation?

a. It is a bad relation between two variables.
b. It is very low correlation between two variables.
c. It is the correlation between two variables having no causal relation.
d. It is a negative correlation

MTP Oct 21

(4) If the coefficient of correlation between two variables is 0.7 then the percentage of variation unaccounted for is

a. 70% b. 30%
c. 51% d. 49%

MTP March 22

(5) If the coefficient of correlation between two variables is –0.9, then the coefficient of determination is
a. 0.9 b. 0.81
c. 0.1 d. 0.19.

MTP June 22

(6) For 10 pairs of observations, number of concurrent deviations was found to be 4. What is the value of the coefficient of concurrent deviation?
a. $\sqrt{0.2}$ b. 1/3
c. -1/3 d. $-\sqrt{0.2}$

MTP Dec 22 – Series I

(7) For n pairs of observations, the coefficient of concurrent deviation is calculated as $\frac{1}{\sqrt{3}}$. If there are six concurrent deviations, n=
a. 11 b. 10
c. 9 d. 8

Answer Key

1	a	2	a	3	c
4	c	5	b	6	c
7	b				

Regression

Past Exam Paper Questions

PYQ Nov. 18

(1) The two line of regression intersect at the point
a. Mean b. Mode
c. Median d. None of these

PYQ Nov. 18

(2) If the two lines of regression are $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$, then the regression line of y on x is:
a. $x + 2y - 5 = 0$
b. $2x + 3y - 8 = 0$
c. $x + 2y = 0$
d. $2x + 3y = 0$

PYQ Nov. 18

(3) If the two regression lines are $3X = Y$ and $8Y = 6X$, then the value of correlation coefficient is
☆ a. 0.5 b. - 0.5
c. 0.75 d. - 0.80

PYQ Nov. 18

(4) The regression coefficient is independent of the change of:
a. Scale b. Origin
c. Both (a) & (b) d. None of these

PYQ June 19

(5) A.M. of regression coefficient is
☆ a. Equal to r
b. Greater than or equal to r
c. Half of r
d. None of these

PYQ Nov. 19

(6) If two line of regression are $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$. So $x + 2y - 5 = 0$ is
a. y on x b. x on y
c. Both (a) & (b) d. None of these

PYQ Nov. 19

(7) Find the coefficient of correlation.
$2x + 3y = 2$
☆ $4x + 3y = 4$
a. - 0.71 b. 0.71
c. - 0.5 d. 0.5

PYQ Jan. 21

(8) The interesting point of the two regression lines: y on x and x on y is
a. (0,0) b. $(\bar{x}, \bar{y})$
c. (b_{yx}, b_{xy}) d. (1, 1)

PYQ Jan. 21

(9) Given that the variance of x is equal to the twice of square of standard deviation of y and the ☆ regression line of y on x is $y = 40 + 0.5(x - 30)$. Then regression line of x on y is
a. $y = 40 + 4(x - 30)$
b. $y = 40 + (x - 30)$
c. $y = 40 + 2(x - 30)$
d. $x = 30 + 2(x - 40)$

Note: Inadequate data to complete problem but by observing option only option d is of the format of X on Y

PYQ Jan. 21

(10) The regression coefficients remain unchanged due to
a. A shift to scale
b. A shift to origin
c. Replacing x – values by $\frac{1}{x}$

d. Replacing y values by $\frac{1}{y}$

PYQ July 21

(11) If $y = 9x$ and $x = 0.01y$ then r is equal to:

a. - 0.1 b. 0.1

☆ c. + 0.3 d. - 0.3

PYQ July 21

(12) The straight – line graph of the linear equation $y = a + bx$, slope is horizontal if:

a. $b = 1$ b. $b \neq 0$

c. $b = 0$ d. $a = b \neq 0$

PYQ July 21

(13) If $b_{yx} = -1.6, b_{xy} = -0.4$ then r_{xy} will be:

a. 0.4 b. - 0.8

c. 0.64 d. 0.8

PYQ July 21

(14) If the slope of the regression line is calculated to be 5.5 and the intercept 15 then the value of Y if X is 6 is:

a. 88 b. 48

c. 18 d. 78

PYQ July 21

(15) For any two variables x and y the regression equations are given as $2x + 5y - 9 = 0$ and $3x - y - 5 = 0$. What are the A.M. of x and y?

a. 2, 1 b. 1, 2

c. 4, 2 d. 2, 4

PYQ July 21

(16) The intersecting point of two regression lines falls at X-axis. If the mean of X-values is 16, the

☆ standard deviations of X and Y are respectively, 3 and 4, then the mean of Y-value is

a. 16/3 b. 4

c. 0 d. 1

PYQ July 21

(17) The regression coefficients remain unchanged due

a. Shift to origin b. Shift to scale

c. Always d. Never

PYQ Dec 22

(18) The equations of the two lines of regression are $4x + 3y + 7 = 0$ and $3x + 4y + 8 = 0$. Find the correlation coefficient between x and y?

a. - 0.75 b. 0.25

c. - 0.92 d. 1.25

PYQ Dec 22

(19) The regression equations are $2x + 3y + 1 = 0$ and $5x + 6y + 1 = 0$, then Mean of x and y respectively are:

a. -1, -1 b. -1, 1

c. 1, -1 d. 2, 3

PYQ Dec 22

(20) If $b_{yx} = 0.5, b_{xy} = 0.46$ then the value of correlation coefficient r is:

a. 0.23 b. 0.25

c. 0.39 d. 0.48

PYQ Jun 23

(21) For variables X and Y, we collect the four observations with $\sum x = 10; \sum y = 14; \sum x^2 = 65; \sum y^2 = 5$ and $\sum xy = 3$. What is the regression line of Y on X?

a. $y = -0.8x - 5.5$

b. $y = 0.8x - 5.5$

c. $y = -0.8x + 5.5$

d. $y = 0.8x + 5.5$

PYQ Jun 23

(22) The regression lines will be perpendicular to each other when the value of r is

a. 1 b. -1

c. 1/2 d. 0

PYQ Jun 23

(23) If the regression equations are $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$, then the mean of x and the mean of y are _____, respectively.

a. - 3 and 4 b. 2 and 4

c. 1 and 2 d. 2 and 1

Answer Key

1	a	2	a	3	a
4	b	5	b	6	a
7	a	8	b	9	d
10	b	11	c	12	c
13	b	14	b	15	a
16	c	17	a	18	a
19	c	20	d	21	c
22	d	23	c		

Regression

Mock Test Paper Questions

MTP May 18

(1) Equations of two lines of regression are $4x+3y+7 = 0$ and $3x+ 4y + 8 = 0$, the mean of x and y are

a. 5/7 & 6/7 b. -4/7 & -11/7

c. 2 & 4 d. none

MTP May 18

(2) If two variables are uncorrelated then regression lines are

☆ a. Parallel b. Perpendicular
c. Coincident d. Inclined at 450

MTP Nov 18

(3) If the two regression co-efficient are 4 and 0.16 the percentage of unexplained variation is:
a. 64 b. 36
c. 54 d. 46

MTP Nov 18

(4) For two variables x and y with the same mean the regression equation are $y = 2x-\alpha$ and $x = 2y-\beta$;
☆ what is the value of common mean
a. $-\alpha$ b. β
c. 0 d. $-\beta$

MTP Nov 18

(5) . In a bivariate population, the linear regression lines $3x+y-2=0$ and $y+x = 0$ then the coefficient of correlation is
a. 0 b. 1/3
c. $-1/3$ d. $-1/\sqrt{3}$

MTP May 19

(6) If $r = 0.6$ then the coefficient of non-determination
a. 0.4 b. -0.6
c. 0.36 d. 0.64

MTP May 19 Series II

(7) The two lines of regression become identical when
a. $r = 1$ b. $r = -1$
c. $r = 0$ d. (a) or (b).

MTP May 19 Series II

(8) If the regression coefficient of y on x is 2.5, the correlation coefficient 0.6 and the SD is y of is 4, the SD of x is
a. 0.64 b. 0.24
c. 0.96 d. 1.44

MTP May 19 Series II

(9) If the regression coefficient of y on x is 1.5 and the variances of x and y is 4 and 9 respectively then the correlation coefficient is
a. 1 b. -1
c. 2.25 d. 1

MTP May 19 Series II

10) If the coefficient of determination is 0.64 and the regression coefficient of x on y is 4 then then the regression coefficient of y on x is
a. 0.32 b. 0.16
c. 0.48 d. 0.96

MTP Nov 19

(11) If two regression coefficients are 4 and 0.16, the percentage of unexplained variation is.
a. 64 b. 36
c. 54 d. 46

MTP Nov 19

(12) If the coefficient of determination is 0.64 and the regression coefficient of x on y is 4 then the regression coefficient y on x is.
a. 0.32 b. 0.16
c. 0.48 d. 0.96

MTP Nov 19

(13) If two variables are independent their covariance is.
a. 1 b. -1
c. 0 d. None of these

MTP Nov 19

(14) The covariance between two variables x and y is 72. The variances of x and y are 144 and 81. The coefficient of correlation is
a. 1/3 b. 4/5
c. 2/3 d. 3/5

MTP Nov 20

(15) The two lines of regression become identical when
a. $r = 1$ b. $r = -1$
c. $r = 0$ d. Both (a) & (b)

MTP Nov 20

(16) The regression coefficients remain unchanged due to a
a. Shift of origin
b. Shift of scale
c. Both (a) and (b)
d. (a) or (b)

MTP March 21

(17) If $u+5x = 6$ and $3y-7v = 20$ and correlation coefficient between x and y is 0.58 then what be the correlation coefficient between U and V ?
a. 0.58 b. -0.58
c. -0.84 d. 0.84

MTP March 21

(18) If $y = 3x+4$ is the regression line y on x and the arithmetic mean of x is -1, what is the arithmetic mean of y
a. 1 b. -1
c. 7 d. None of these

MTP Apr 21

(19) The regression equation x and y is $3x + 2y = 100$, the value of b_{xy}
a. -2/3 b. 100/3
c. 3/2 d. 2/3

MTP Nov 21

(20) The coefficients of correlation between two variables x and y is the simple _____ of two regression coefficients.
a. Harmonic Mean
b. Arithmetic Mean
c. Geometric Mean
d. None of the above

MTP Nov 21

(21) If r=0, regression lines are:
a. Perpendicular
b. Parallel
c. They coincide
d. Cannot be determined

MTP Oct 21

(22) If the regression line of y on x and of x on y are given by $2x + 3y = -1$ and $5x + 6y = -1$ then the arithmetic means of x and y are given by
a. $(1, -1)$ b. $(-1, 1)$
c. $(-1, -1)$ d. $(2, 3)$

MTP March 22

(23) The regression coefficients remain unchanged due to
a. Shift to origin b. Shift to scale
c. Always d. Never

MTP June 22

(24) Consider the two regression lines $3x + 2y = 26$ & $6x + y = 31$, Find the mean values of x and y.
a. $\bar{x} = 4$ and $\bar{y} = 7$
b. $\bar{x} = 7$ and $\bar{y} = 4$
c. $\bar{x} = 5$ and $\bar{y} = 6$
d. None of these

MTP June 22

(25) If the regression line of Y on X is given by $Y = X + 2$ and Karl Pearson's coefficient of correlation is 0.5 then $\frac{\sigma_y^2}{\sigma_X^2} =$ _____.
a. 3 b. 2
c. 4 d. None of these

MTP Dec 22 – Series I

(26) If $4y - 5x = 15$ is the regression line of y on x and the coefficient of correlation between x and y is 0.75, what is the value of the regression coefficient of x on y?
a. 0.45 b. 0.9375
c. 0.6 d. None of these

MTP Dec 22 – Series I

(27) If the regression line of y on x and of x on y are given by $2x + 3y = -1$ and $5x + 6y = -1$ then the arithmetic means of x and y are given by.
a. (1,-1) b. (-1,1)
c. (-1,-1) d. (2,3)

MTP Dec 22 – Series I

(28) For a positive and perfectly correlated random variables, regression coefficient of x on y is 1.4 and the standard deviation of X is 2, the variance of Y is
a. 2.37 b. 6.76
c. 6.56 d. 3.16
Note: There is some error in que given in MTP, we have modified as per correct option.

MTP Dec 22 Series II

(29) If the two lines of regression are $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$, then the regression line of y on x is:
a. $x + 2y - 5 = 0$ b. $x + 2y = 0$
c. $2x + 3y - 8 = 0$ d. $2x + 3y = 0$

MTP Dec 22 Series II

(30) If the two regression lines are $3X = Y$ and $8Y = 6X$ then the value of correlation coefficient is:
a. -0.5 b. 0.5
c. 0.75 d. -0.80

MTP Dec 22 Series II

(31) AM of regression coefficient is:
a. Equal to r
b. Greater than or equal to r
c. half of r
d. None of these

MTP Dec 22 Series II

(32) If the regression line of y on x is given by $y = x + 2$ and Karl Pearson's coefficient of correlation is 0.5 then $\frac{\sigma_y^2}{\sigma_x^2} =$
a. 3 b. 2
c. 4 d. None of these

MTP Dec 22 Series II

(33) When two lines of regression become identical when
a. $R = 1$ b. $R = -1$
c. $R = 0$ d. a or b

MTP June 2023 Series I

(34) The equations of the two lines of regression are $4x + 3y + 7 = 0$ and $3x + 4y + 8 = 0$. Find the correlation coefficient between x and y.

a. - 0.75 b. 0.25
c. - 0.92 d. 1.25

MTP June 2023 Series I

(35) The regression equation are $2x + 3y + 1 = 0$ and $5x + 6y + 1 = 0$, then Mean of x and y respectively are

a. - 1, -1 b. - 1, 1
c. 1, - 1 d. 2, 3

MTP June 2023 Series I

(36) If byx = 0.5, bxy = 0.45 then the value of correlation coefficient is:

a. 0.23 b. 0.25
c. 0.39 d. 0.47

MTP June 2023 Series I

(37) If Y is dependent variable and X is independent variable and the S.D. of X and Y are 5 and 8 respectively and co-efficient of co-relation between X and Y is 0.8. Find the Regression coefficient of Y on X:

a. 0.78 b. 1.28
c. 6.8 d. 0.32

MTP Dec 22 Series II

(38) In regression analysis, which of the following can be in the form of an index number?

a. Only dependent variable
b. Only independent variable
c. Both A and B
d. Need more information

MTP Dec 22 Series II

(39) If both the regression coefficients are negative, what will be coefficient of correlation?

a. Negative
b. Positive
c. Can be either positive of negative
d. Cannot be determined

MTP Dec 22 Series II

(40) If the regression equation of two variables are $5x - y = 4$ and $3x - 2y = 1$. Find the arithmetic means of x and y

a. 2, 1
b. 2, 2
c. 1, 1
d. Cannot be determined

Answer Key

1	b	2	b	3	b
4	b	5	d	6	d
7	d	8	c	9	d
10	b	11	b	12	b
13	c	14	c	15	d
16	a	17	b	18	a
19	a	20	c	21	a
22	a	23	a	24	a
25	c	26	a	27	a
28	a	29	a	30	b
31	b	32	c	33	d
34	a	35	c	36	d
37	b	38	c	39	a
40	c				

Other Topics

Past Exam Paper Questions

PYQ May 18

(1) The coefficient of determination is defined by the formula

a. $r^2 = \frac{1 - unexplained\ variance}{total\ variance}$

b. $r^2 = \frac{explained\ variance}{total\ variance}$

c. both (a) and (b)
d. None of these

PYQ June 19

(2) Find the probable error if $r = 2/\sqrt{10}$ and n = 36

a. 0.6745 b. 0.067
c. 0.5287 d. None of these

PYQ Nov. 20

(3) Which of the following is spurious correlation?

a. Correlation between two variables having no casual relationship
b. Negative correlation
c. Bad relation between two variables
d. Very low correlation between two variables

PYQ Jun 23

(4) Given that r = 0.4 and n = 81, determine the limits for the population correlation coefficient.

a. (0.333, 0.466) b. (0.367, 0.433)
c. (0.337, 0.463) d. (0.373, 0.427)

Answer Key

1 c 2 b 3 a
4 c

Other Topics

Mock Test Paper Questions

MTP May 19 Series II

(1) If the coefficient of correlation between two variables is 0.7 then the percentage of variation unaccounted for is
a. 70% b. 30%
c. 51% d. 49%

MTP May 20

(2) What is spurious correlation?
a. It is a bad relation between two variables
b. It is very low correlation between two variables.
c. It is the correlation between two variables having no causal relation.
d. It is a negative correlation.

MTP May 20

(3) If the coefficient of correlation between two variables is 0.8 then the percentage of variation unaccounted for is
a. 70% b. 30%
c. 51% d. 36%

MTP Nov 20

(4) If the coefficient of correlation between two variables is –0.9, then the coefficient of determination is
a. 0.9
b. 0.81
c. 0.1
d. 0.19

MTP March 2021

(5) The coefficient of two variables is 0.9, then coefficient of non-determination is
a. 0.9 b. 0.19
c. 0.81 d. 0.1

MTP Apr 21

(6) If the coefficient of correlation between two variables is 0.8 then the percentage of variation unaccounted for is
a. 70% b. 30%
c. 51% d. 36%

MTP June 2023 Series II

(7) Correlation between unrelated variables is not because of:
a. Coefficient of non-determination
b. Existence of third variable related to both the variables
c. Spurious correlation
d. None of the above

Answer Key

1 c 2 c 3 d
4 b 5 b 6 d
7 c

Chapter 18: Index Numbers

Index Numbers Theory Questions

Past Year Questions

PYQ May 18

(1) Time reversal and factor reversal are:
- a. Quantity Index
- b. Ideal Index
- c. Price Index
- d. Test of consistency

PYQ May 18

(2) A series of numerical figures which show the relative position is called
- a. Index number
- b. Relative number
- c. Absolute number
- d. None of these

PYQ May 18

(3) The number of test of Adequacy is:
- a. 2
- b. 5
- c. 3
- d. 4

PYQ May 18

(4) P_{01} is the index for time
- a. 1 on 0
- b. 0 on 1
- c. 1 on 1
- d. 0 on 0

PYQ May 18

(5) The circular test is an extension of
- a. The time reversal test
- b. The factor reversal test
- c. The unit test
- d. None of these

PYQ May 18

(6) Price – relative is expressed in term of
- a. $P=\frac{P_n}{P_o}$
- b. $P=\frac{P_0}{P_n}$
- c. $P=\frac{P_n}{P_o}\times 100$
- d. $P=\frac{P_0}{P_n}\times 100$

PYQ May 18

(7) Circular test is satisfied by
- a. Lespeyre's Index Number
- b. Paasche's Index Number
- c. The simple geometric mean of price relatives and the weighted aggregative with fixed weights
- d. None of these

PYQ May 18

(8) TS The multiplicative time series model is
- a. $y=T+S+C+I$
- b. $y=T*C*I$
- c. $y=a+bx$
- d. $y=a+bx+cx^2$

PYQ Nov. 18

(9) Which of the following statement is true?
- a. Paache's Index Number is based on the base year quantity
- b. Fisher's Index Number is the Arithmetic Mean of Laspeye's Index Number and Paache's Index Number
- c. Arithmetic Mean is the most appropriate average for constructing the index number
- d. Fisher's Index Number is an Ideal Index Number

PYQ Nov. 18

(10) TS The simple average method is used to calculate
- a. Trend Variation
- b. Cyclical Variation
- c. Seasonal Variation
- d. Irregular Variation

PYQ Nov. 18

(11) The sale of Cold Drink would go up in summers and go down in the winters is an example of
- a. Trend Variation
- b. Cyclical Variation
- c. Seasonal Variation
- d. Irregular Variation

PYQ June 19

(12) Which is called an ideal index numbers
- a. Laspeyre's index number
- b. Passche's index number
- c. Fisher's index number
- d. Marshall Edgeworth index number

PYQ June 19

(13) TS In semi averages method, if the number of values is odd then we drop:
- a. First value
- b. Last value
- c. Middle value
- d. Middle two value

PYQ June 19

(14) Which is not satisfied by Fisher's ideal index number?
- a. Factor Reversal Test
- b. Time Reversal Test
- c. Circular Test

d. None of these

PYQ June 19

(15) Trend in semi average is:
TS a. Linear b. Parabola
c. Exponential d. None of these

PYQ June 19

(16) The most commonly used mathematical method for finding secular trend is
TS a. Moving average
b. Simple average
c. Exponential
d. None of these

PYQ Nov. 19

(17) When sale of cold drink increases in summer and decreases in winters is an example of?
a. Seasonal variations
b. Cyclic variations
c. Secular variations
d. None of these

PYQ Nov. 19

(18) Seasonal variations take place within:
TS a. One year b. Two years
c. Half year d. Five years

PYQ Nov. 19

(19) Fisher's index number does not satisfy:
a. Circular test
b. Time reversal test
c. Factor reversal test
d. Unit test

PYQ Nov. 19

(20) In semi-average method if the no. of values is odd, we exclude:
TS a. First value b. Last value
c. Middle value d. None of these

PYQ Nov. 20

(21) Fisher's ideal index number does not satisfy _____ test
a. Circular
b. Time reversal
c. Factor reversal
d. Unit

PYQ Nov. 20

(22) Index numbers are expressed as
a. Squares b. Ratio
c. Percentages d. Combinations

PYQ Jan. 21

(23) The cost of living index is always
a. Price index number
b. Quantity index number
c. Weighted index number
d. Value index number

PYQ Jan. 21

(24) Fisher's index number does not satisfy
a. Unit test
b. Circular test
c. Time reversal test
d. Factor reversal test

PYQ Jan. 21

(25) When the prices for quantities consumed of all commodities are changing in the same ratio,
☆ then the index numbers due to Laspeyre's and Paasche's will be:
a. Equal
b. Unequal
c. Reciprocal of Marshall Edge worth Index Number
d. Reciprocal of Fisher Index Number

PYQ Dec. 21

(26) If P_{10} and P_{01} are index for 1 on 0 and 0 on 1 respec. then formula $P_{01} \times P_{10} = 1$ is used for
a. Unit test
b. Time Reversal Test
c. Factor Reversal Test
d. Circular Test

PYQ Dec. 21

(27) The weighted averaged of price relatives of commodities, when the weights are equal to the
☆ value of commodities in the current year, yields_____ index number.
a. Fisher's ideal
b. Lasperey's
c. Paasche's
d. Marshall-Edgeworth

PYQ Dec. 21

(28) Index numbers are not helpful in
a. Framing economics policies
b. Revealing trend
c. Forecasting
d. Identifying errors

PYQ Dec. 21

(29) The three index numbers, namely, Laspeyre, Paasche and Fisher do not satisfy_____ test.
a. Time reversal b. Factor reversal
c. Unit d. Circular

PYQ June 22

(30) Geometric mean method used in which index number to find it out
a. Laspeyre's
b. Paasche's
c. Fishers index number
d. None of these

PYQ June 22

(31) Which test is known for shift base index no.
a. Factor test
b. Unit test
c. Circular test
d. Time reversal test

PYQ June 22

(32) Laspeyre and Paasche do not satisfy -
a. Unit test
b. Factor test
c. Time reversal test
d. Bowley's test

PYQ June 22

(33) Lasspeyer's index number is based on?
a. Last year weight
b. Present year weight
c. Last year value
d. Present year value

PYQ June 22

(34) Price relative is-
a. $\frac{P_1}{P_0} \times 100$ b. P_0
c. P_0 d. P_1 / P_0

PYQ June 22

(35) Which one of the following is not appropriate for calculation of index number?
a. Unit test
b. Price relative test
c. Circular test
d. Time reversal test

PYQ Dec 22

(36) Which of the following index measures the change from month to month in the cost of a ☆ representative basket of goods and services of the type which are bought by a typical household?
a. Retail Price Index
b. Laspeyre's Index
c. Fisher's Index
d. Paasche's Index

PYQ Dec 22

(37) Fisher's index number is called as ideal index number because it is satisfying
a. Factor reversal test
b. Time reversal test
c. Both factor and time reversal test
d. Circular test

PYQ Dec 22

(38) In price index, when a new commodity is required to be added, which of the following index is used?
a. Shifted price index
b. Splicing price index
c. Deflating price index
d. Value price index

PYQ Jun 23

(39) Which of the below index is computed by taking the average of base year and current year?
a. Marshall-Edgeworth index
b. Paasche's Index
c. Laspeyre's Index
d. Fisher's Index

PYQ Jun 23

(40) Weighted geometric mean of relative formula satisfies _____ test while Factor Reversal test is satisfied by_____.
a. Time Reversal, Fisher's Ideal Index
b. Time Reversal, Laspeyre's Index
c. Factor Reversal, Paasche's Index
d. Factor Reversal, Fisher's Ideal Index

Answer Key

1 d	2 a	3 d
4 a	5 a	6 c
7 c	8 b	9 d
10 c	11 c	12 c
13 c	14 c	15 a
16 b	17 a	18 a
19 a	20 c	21 a
22 c	23 c	24 b
25 a	26 b	27 c
28 d	29 d	30 c
31 c	32 c	33 a
34 a	35 b	36 a
37 c	38 a	39 a
40 a		

Index Numbers Theory Questions

Mock Test Paper Questions

MTP May 18

(1) The _____ is satisfied when $P_{ab} \times P_{bc} \times P_{ca} = 1$
- a. Time reversal test
- b. Factor reversal test
- c. Circular Test
- d. none of these

MTP May 18

(2) The number of tests of Adequacy
- a. 2
- b. 3
- c. 4
- d. 5

MTP Nov 18

(3) Fishers' Ideal Index number is
- a. The median of Laspyre's and Paasches Index numbers
- b. The Arithmetic mean of Laspyres and Paasche's Index numbers
- c. The geometric mean of Laspyres and Paasche's Index Numbers
- d. None of these

MTP Nov 18

(4) Fishers Ideal Formula satisfies
(1) Unit Test
(2) Circular Test
(3) Factor Reversal Test
(4) Time Reversal Test
- a. 1 and 2
- b. 1, 3 and 4
- c. 1 and 3
- d. 1, 2 and 3

MTP Nov 18

(5) While construction of Index numbers which of the following has to be considered as point of reference in company various data describing individual behaviour
- a. Selection of weights
- b. Base Period
- c. Selection of Formulae
- d. Choice of variables

MTP Nov 18

(6) ☆ Which of the options does not contain the proper use of Index numbers
- a. Helpful in policy determination
- b. Useful in Forecasting
- c. Equally useful in all condition for different purpose
- d. Helpful in comparison

MTP May 19

(7) Weighted G.M. of relative formula satisfy _____test
- a. Time Reversal Test
- b. Circular test
- c. Factor Reversal Test
- d. None of these

MTP May 19

(8) Laspyre's method and Paasche's method do not satisfy
- a. Unit Test
- b. Time Reversal Test
- c. Factor Reversal Test
- d. (b) and (c)

MTP May 19

(9) Fisher's index number is based on
- a. The Arithmetic mean of Laspeyre's and Paasche's index numbers.
- b. The Median of Laspeyre's and Paasche's index numbers
- c. The Mode of Laspeyre's and Paasche's index numbers.
- d. The GM of Laspeyre's and Paasche's index numbers.

MTP May 19

(10) Purchasing Power of Money is
- a. Reciprocal of price index number
- b. Equal to price index number.
- c. Unequal to price index number.
- d. None of these.

MTP May 19 Series II

(11) Chain index is equal to
- a. $\frac{\text{Link relative of current year}}{\text{Chain index of the current year}} \times 100$
- b. $\frac{\text{Link relative of PY}}{100} \times \text{Chain index of CY}$
- c. $\frac{\text{Link relative of CY}}{100} \times \text{Chain index of PY}$
- d. $\frac{\text{Link relative of PY}}{100} \times \text{Chain index of PY}$

MTP May 19 Series II

(12) The formula should be independent of the unit in which or for which price and quantities are quoted in
- a. Unit test
- b. Time Reversal Test
- c. Factor Reversal Test
- d. None of these

MTP May 19 Series II

(13) The formula for conversion to current value

a. Deflated value = $\frac{\text{Price Index of the current year}}{\text{previous value}}$

b. Deflated value = $\frac{\text{current value}}{\text{Price Index of current year}}$

c. Deflated value = $\frac{\text{Price Index of the previous year}}{\text{previous value}}$

d. Deflated value = $\frac{\text{Price Index of the previous year}}{\text{previous value}}$

MTP Nov 19

(14) Circular test is the extension of
a. Unit test
b. Factor reversal test
c. Time reversal test
d. None of these

MTP Nov 19

(15) Unit test is not satisfied by
a. Fishers Index number
b. Laspyers Index number
c. Simple Aggregative
d. Bowleys Index number

MTP Nov 19

(16) The best average for construction of Index Number is
a. AM b. GM
c. HM d. None of these

MTP May 20

(17) Fisher's index number satisfies the _____ tests
a. Time Reversal Test
b. Factor Reversal Test
c. Both (a) & (b)
d. None of these

MTP May 20

(18) Fisher's ideal index number is
a. The Median of Laspeyre's and Paasche's index numbers
b. The Arithmetic Mean of Laspeyre's and Paasche's index numbers
c. The Geometric Mean of Laspeyre's and Paasche's index numbers
d. None of these

MTP Nov 20

(19) Purchasing Power of Money is
a. Reciprocal of price index number
b. Equal to price index number
c. Unequal to price index number
d. None of these

MTP Nov 20

(20) Factor reversal test is satisfied by
a. Fisher's ideal index number
b. Laspeyre's index number
c. Paasche's index number
d. All of the above

MTP Nov 20

(21) The number of tests adequacy is
a. 2 b. 5
c. 3 d. 4

MTP March 21

(22) Fishers Price Index number is equal is
a. G. M of Kelly's Price Index number and Paasche's Price Index number
b. G.M of Laspyres and Paaches Price Index number
c. G.M of Bowley's price index number and Paasche's Index number.
d. None of these

MTP Apr 21

(23) Purchasing power of money is
a. Reciprocal of price index
b. Equal to price index
c. Unequal to price index
d. None of these

MTP Nov 21

(24) Which is called an ideal index number
a. Laspyres Index number
b. Pasches Index number
c. Fishers Index number
d. Marshall- Edgeworth Index number

MTP Nov 21

(25) The circular test is an extension of
a. The time reversal test
b. The factor reversal test
c. The Unit test
d. None of these

MTP Nov 21

(26) Circular test is satisfied by
a. Laspeyre's Index number
b. Paasche's index number
c. The simple geometric mean of price relatives and price relatives and weighted aggregative with fixed weights.
d. None of these

MTP Oct 21

(27) _____ satisfies circular test
a. G.M. of price relatives or the weighted aggregate with fixed weights
b. A.M. of price relatives or the weighted aggregate with fixed weights
c. H.M. of price relatives or the weighted aggregate with fixed weights
d. none

MTP Oct 21

(28) Laspyres formula does not satisfy
a. Factor Reversal Test
b. Time Reversal Test
c. Circular Test
d. All the above

MTP March 22

(29) Index numbers are not helpful in
a. Framing Economic Policies
b. Revealing Trend
c. Forecasting
d. Identifying errors

MTP March 22

(30) The weighted average of price relatives of commodities when the weight is equal to the value of commodities in base year yields _____index number
a. Fisher's Ideal
b. Laspyres
c. Paasches
d. Marshall-Edgeworth

MTP June 22

(31) The number of tests of Adequacy is
a. 2 b. 3
c. 4 d. 5

MTP June 22

(32) Fishers Ideal formula for calculating Index number satisfies the
a. Unit Test
b. Factor Reversal Test
c. Time reversal Test
d. All of these

MTP June 22

(33) Purchasing power of money is
a. Reciprocal of Price index number
b. Equal to Price Index number
c. Unequal to Price Index number
d. None of these

MTP Dec 22 – Series I

(34) The Circular Test is known as:
a. $P_{01} \times P_{12} \times P_{20} = 1$
b. $P_{12} \times P_{01} \times P_{20} = 1$
c. $P_{20} \times P_{12} \times P_{01} = 1$
d. $P_{02} \times P_{21} \times P_{12} = 1$

MTP Dec 22 – Series I

(35) Laspeyres index number is a weighted aggregate method by taking _____ as weights.
a. The quantity consumed in the base year
b. The quantity consumed in the current year
c. Value of items consumed in the base year
d. Value of items consumed in the current year

MTP Dec 22 – Series II

(36) Which is not satisfied by Fisher's Ideal Index Number?
a. Factor Reversal Test
b. Time Reversal Test
c. Circular Test
d. None of these

MTP Dec 22 Series II

(37) The number of test adequacy is
a. 2 b. 5
c. 3 d. 4

MTP Dec 22 Series II

(38) Laspyers method and Paasches method do not satisfy
a. Unit Test
b. Time Reversal Test
c. Factor Reversal Test
d. Both (b) & (c)

MTP Dec 22 Series II

(39) Fisher's index number is called as ideal index number because is in satisfies.
a. Factor reversal test
b. Time reversal test
c. Both factor and time reversal test
d. Circular test

MTP June 2023 Series I

(40) Which index measures the change from month to month in the cost of a representative basket of goods and services of the type bought by a typical household?

a. Retail Price Index
b. Laspeyre's Index
c. Fisher's Index
d. Paasche's Index

MTP June 2023 Series I

(41) In price index, when a new commodity is required to be added, which of the following index is used?

a. Shifted price index
b. Splicing price index
c. Deflating price index
d. Value price index

MTP June 2023 Series II

(42) Which test should be considered necessarily to verify the consistency while we select an appropriate index formula

a. Circular test
b. Time reversal test
c. Factor reversal test
d. Both b and c

MTP June 2023 Series II

(43) Circular test is satisfied by which of the following index?

a. Laspeyres index
b. Paasche's index
c. Fisher's index
d. Simple geometric mean of price relatives

MTP June 2023 Series II

(44) The purchasing power of money is_____

a. Not equal to the price index number
b. Reciprocal of the price index number
c. Equal to the price index number
d. None of these

MTP June 2023 Series II

(45) Fisher's method of calculating the index number is based on the _____

a. Geometric mean
b. Arithmetic mean
c. Harmonic mean
d. None of these

Answer Key

1	c	2	c	3	c
4	b	5	b	6	c
7	a	8	d	9	d
10	a	11	c	12	a
13	b	14	c	15	c
16	b	17	c	18	c
19	a	20	a	21	d
22	b	23	a	24	c
25	a	26	c	27	a
28	d	29	d	30	b
31	c	32	d	33	a
34	a	35	a	36	c
37	d	38	d	39	c
40	a	41	a	42	d
43	d	44	b	45	a

Index Numbers Practical Questions

Past Year Questions

PYQ May 18

(1) If $\sum P_0Q_0 = 1360, \sum P_nQ_0 = 1900$ $\sum P_0Q_n = 1344$ $\sum P_nQ_n = 1880$ then Lasperey's Index number is

a. 0.71 b. 1.39
c. 1.75 d. None of these

PYQ May 18

(2) ☆ If the 1970 index with base 1965 is 200 and 1965 index with base 1960 is 150, what will be the index of 1970 on base 1960?

a. 700 b. 300
c. 500 d. 600

PYQ Nov. 18

(3) If Laspeyre's Index Number is 250 and Paache's Index Number is 160, then Fisher's Index number is

a. 40,000 b. $\frac{25}{16}$
c. 200 d. $\frac{16}{25}$

PYQ Nov. 18

(4) If $\sum p_0q_0 = 240, \sum p_1q_1 = 480, \sum p_1q_0 = 600$ and $\sum p_0q_1 = 192$, then Laspeyre's Index Number is

a. 250 b. 300
c. 350 d. 200

PYQ June 19

(5) The prices and quantities of 3 commodities in base and current years are as follows:

p_0	p_1	q_0	q_1
12	14	10	20
10	8	20	30
8	10	30	10

The Laspeyre price index is

a. 118.13 b. 107.14
c. 120.10 d. None of these

PYQ June 19

(6) ☆ The cost of living index numbers in years 2015 and 2018 were 97.5 and 115 respectively. The salary of a worker in 2015 was ₹ 19500. How much additional salary was required for him in 2018 to maintain the some standard of living as in 2015?

a. 3000 b. 4000
c. 3500 d. 4500

PYQ Nov. 19

(7) The index number of prices at place in the year 2008 is 225 with 2004 as the base then there is:

a. 125% increase b. 225% increase
c. 110% increase d. 25% increase

PYQ Nov. 20

(8) In Laspeyre's index number is 110 and Fisher's ideal index number is 109. Then Paasche's index number is

a. 118 b. 110
c. 109 d. 108

PYQ July 21

(9) The weighted aggregative price index turnover for 2001 with 2000 as the base year using Fisher's Index Number is:

Commodity	Price (In ₹)		Quantity	
	2000	2001	2000	2001
A	10	12	20	22
B	8	8	16	18
C	5	6	10	11
D	4	4	7	8

a. 112.26 b. 112.20
c. 112.32 d. 126.01

PYQ July 21

(10) The weighted aggregative price index turnover for 2001 with 2000 as the base year using Paasche's Index Number is:

Commodity	Price (In ₹)		Quantities	
	2000	2001	2000	2001
A	10	12	20	22
B	8	8	16	18
C	5	6	10	11
D	4	4	7	8

a. 112.32 b. 112.38
c. 112.26 d. 112.20

PYQ July 21

(11) TS If in an additive model O refers to original data as 875, T refers to trend 700, S refers to seasonal variations -200, C refers to cyclical variations 75 then the value of I which refers to irregular variation is:

a. -100 b. - 170
c. - 140 d. - 150

PYQ July 21

(12) The weighted aggregative price index turnover for 2001 with 2000 as the base year using Marshall Edgeworth Index Number is:

Commodity	Price In (₹)		Quantities	
	2000	2001	2000	2001
A	10	12	20	22
B	8	8	16	18
C	5	6	10	11
D	4	4	7	8

a. 112.26 b. 112.20
c. 112.32 d. 112.38

PYQ July 21

(13) ☆ The consumer price index goes up from 120 to 180 when salary goes up from 240 to 540, what is the increase in real terms?

a. 80 b. 150
c. 100 d. 240

PYQ Dec. 21

(14) From the following data base year:

Commodity	Base Year		Current Year	
	Price	Qty	Price	Qty
A	4	3	6	2
B	5	4	6	4
C	7	2	9	2
D	2	3	1	5

Fisher's Ideal Index is

a. 117.30 b. 115.43
c. 118.35 d. 116.48

PYQ Jun 23

(15) Consider the data

Year	Base year		Current year	
Commodities	Price	Quantity	Price	Quantity
A	10	5	20	2
B	15	4	25	8
C	40	2	60	6
D	25	3	40	4

Laspeyre's index is

a. 166.04 b. 166.40
c. 164.04 d. 164.4

PYQ Jun 23

(16) The index number of prices for a country at a given data is 250. In comparison to the base period price, the price of all commodities in the country has increased by ____ times.

a. 1.25 b. 1.5
c. 2 d. 2.5

PYQ Jun 23

(17) If Fisher's index number is 160 and Paasche's index number is 140, then Laspeyre's index number is

a. 147.77 b. 182.85
c. 183.35 d. 146.25

Answer Key

1 b	2 b	3 c
4 a	5 b	6 c
7 a	8 d	9 a
10 d	11 a	12 a
13 c	14 a	15 a
16 b	17 b	

Index Numbers Practical Questions

Mock Test Paper Questions

MTP May 18

(1) The index number of prices at a place in 2008 is 355 with 2003 as base. This means

a. There has been on the average a 255% increase in prices
b. There has been on the average a 355% increase in price.
c. There has been on the average a 250% increase in price.
d. None of these.

MTP Nov 19

(2) The Paasches and Fishers index numbers are 169 and 156 respectively, then Laspyre's Index number is

a. 144 b. 152
c. 148 d. 151.5

MTP May 20

(3) The Paasches and Fishers index numbers are 169 and 156 respectively, then Laspyre's Index number is

a. 144 b. 152
c. 148 d. 151.5

MTP May 20

(4) The whole sale price index number or agricultural commodities in a given region at a given date is 280. The percentage increase in prices of agricultural commodities over the base year is:

a. 380 b. 280
c. 180 d. 80

MTP Nov 20

(5) ☆ During the certain period the C.L.I. goes up from 110 to 200 and the Salary of a worker is also raised from 330 to 500, then the change in real terms is

a. Loss by ₹ 50
b. Loss by ₹ 75
c. Loss by ₹ 90
d. None of these

MTP Nov 20

(6) In year 2005, the whole sale price index number is 286 with 1985 as base year, then how much the prices have increased in 2005 in comparison to 1995?

a. 286% b. 386%
c. 86% d. 186%

MTP March 21

(7) The prices of commodity in the year 2015 and 2020 were 25 and 30 respectively taking 2020 as base year the price relative is

a. 109.8 b. 110.25
c. 113.25 d. 83.33

MTP March 21

(8) For year 2015, price index was 267% with base year 2005. The percentage increase in price index over base year 2005 is:

a. 267% b. 67%
c. 167% d. None of these

MTP Apr 21

(9) If an increase of 10% in prices. The rise in wages is 20% then the real wage has increased

☆ by an index time series is a list of _____ numbers for two or more periods of time.

a. 20% b. 10%

c. Less than 10% d. More than 20%

MTP Apr 21

(10) The cost of living index numbers in years 2015 and 2021 were 97.5 and 115 respectively. The salary of a worker in 2015 was ₹ 19,500. How much additional salary is required for him in 2021 to maintain living standard of 2015?

a. ₹ 3000 b. ₹ 4000

c. ₹ 3500 d. ₹ 4500

MTP Nov 21

(11) If Laspyres index number is 250 and Paschees index number is 160, them Fishers Index number is

a. 200 b. 120

c. 150 d. 170

MTP Nov 21

(12) If the price of a commodity in a place have decreased by 30% over the based period places, then the index number of that place is

a. 30 b. 60

c. 70 d. 80

MTP Oct 21

(13) From the following data for the 5 groups combined

Group	Weights	Index no
Food	35	425
cloth	15	235
Power&fuel	20	215
Rent&rates	8	115
miscellaneous	22	150

The general Index number is

a. 270 b. 269.2

c. 268.5 d. 272.5

MTP Oct 21

(14) If $\sum P_0Q_0 = 1360$, $\sum P_nQ_0 = 1900$, $\sum P_nQ_n = 1880$ then the Lasperey's Index number is

a. 71 b. 139

c. 175 d. None of these

MTP Oct 21

(15) The consumer price Index for April 1985 was 125. The food price index was 120 and other

☆ items index was 135. The percentage of food out of the total weight of the index is

a. 66.67 b. 68.28

c. 90.25 d. None of these

MTP Oct 21

(16) Net monthly salary of an employee was ₹ 3000 in 1980. The consumer price index number in 1985 is 250 with 1980 as base year. If the has to be rightly compensated then, 7th dearness allowances to be paid to the employee is:

a. ₹4.800.00 b. ₹4,700.00

c. ₹4,500.0 d. None of these.

MTP Mar 22

(17) The index number for the year 2012 taking 2011 as the base year from the data given below by using simple average of price relative method is

Commodity	A	B	C	D	E
Price in 2011	115	108	95	85	90
Price in 2012	125	117	108	95	95

a. 112 b. 117

c. 120 d. 111

MTP March 22

(18) Suppose a business executive was earning F₹ 2,050 in the base period. What should be his salary in the current period if his standard of living is to remain the same? Given $\sum W = 25$ and $\sum IW = 3544$:

a. ₹ 2096 b. ₹ 2906

c. ₹ 2106 d. ₹ 2306

MTP March 22

(19) Find the Paasche's Index number for prices from the following

Commodity	Base Year		Current Year	
	P	Q	P	Q
A	1	6	3	5
B	3	5	8	5
C	4	8	10	6

a. 261.36 b. 265.48

c. 274.32 d. 282

MTP June 22

(20) The simple index number for the current year using simple aggregate method for the following ☆ data

Commodity base	Base year Price (P0)	Current Year Price (P1)
Wheat	80	100
Rice	100	150
Gram	120	250
Pulses	200	300

a. 200 b. 150
c. 240 d. 160

MTP June 22

(21) The cost-of-living index number in year 2015 and 2018 were 97.5 and 115 respectively. The salary of CA Jitendra in 2015 was 195000. How much additional salary was required for him in 2018 to maintain the same standard of living as in 2015?

a. 35,000
b. 40,000
c. 35,000
d. 45,000

MTP Dec 22 – Series I

(22) Consumer Price Index Number goes up from 100 to 200 and salary of a worker is also raised ☆ from 300 to 500, then Real Wage is

a. 300 b. 250
c. 600 d. 350

MTP Dec 22 – Series I

(23) In the data group, Bowley's and Laspyre's index ☆ number is as follows. Bowley's index number is 150, Laspyre's index number is 180 then Paasche's index number is

a. 120 b. 30
c. 165 d. None of these

MTP Dec 22 – Series I

(24) The prices and quantities of 3 commodities in base and current years are as follows:

P_0	P_1	Q_0	Q_1
12	14	10	20
10	8	20	30
8	10	30	10

The Laspyre's Price Index Number is:

a. 118.13 b. 107.14
c. 120.10 d. None of these

MTP Dec 22 Series II

(25) The cost of living index number in year 2015 and 2018 were 97.5 and 115 respectively. The salary of a worker in 2015 was 19500. How much additional salary was required for him in 2018 to maintain the same standard of living as in 2015?

a. 3000 b. 4000
c. 3500 d. 4500

MTP June 2023 Series I

(26) From the following data constructed the index number by Laspeyre's method

$\sum P_1Q_1 = 100, \sum P_0Q_1 = 86,$
$\sum P_0Q_0 = 83, \sum P_1Q_0 = 106$

a. 130.36 b. 131.51
c. 130.59 d. 127.71

MTP June 2023 Series I

(27) If Fisher's index = 150 and Paasche's Index = 144, then Laspeyre's index is _____

a. 147 b. 156.25
c. 104.17 d. 138

MTP June 2023 Series I

(28) If Laspeyers index is A and Fisher's index is B. Find the value of Passche's index

a. B^2 / A b. A^2 / B
c. $A / 2B$ d. $2B / A$

Answer Key

1 a	2 a	3 a
4 c	5 a	6 d
7 d	8 c	9 c
10 c	11 a	12 c
13 b	14 b	15 a
16 c	17 d	18 b
19 a	20 d	21 a
22 b	23 a	24 b
25 c	26 d	27 b
28 a		