Maths Question Paper June 2024

Ques 1.

A less-than ogive curve is drawn by plotting

- a) Less than Cumulative frequencies on the vertical axis
- b) More than Cumulative Frequencies on vertical axis
- c) Highest Frequencies on vertical axis
- d) Lower Frequencies on vertical axis

Ques 2.

A says, "B is my sister's son". B says, "C is my father-in-law". C says, "D is my wife's brother." what can be the relationship between A&D?

- a) Uncle-Nephew
- b) Brothers-Sister
- c) Father-Son
- d) Cousin

Ques 3.

A is B's Sister. C is B's mother. D is C's father. E is D's mother. How is A related to D?

- a) Grandmother
- b) Grandfather
- c) Daughter
- d) Grand Daughter

Ques 4.

Two frequency distribution are given to you. To compare them visually; the best diagram to be drawn on the same sheet is

- a) Pie chart
- b) Histogram
- <mark>c)</mark> Frequency polygon
- d) Bar chart

Ques 5.

If a loan of ₹30,000 is to be paid in 5 annual instalments with interest rate of 14%p.a, then the equal annual instalment will be _____. [Take P(5,0.14)=3.43308]

- a) ₹7,400
- b) ₹8,100
- c) ₹8,738
- d) ₹8,322

Ques 6.

Assuming that the discount rate is 12% p.a, how much would you pay to get ₹100 per year, growing at 4% annually forever?

a) 1,425
b) 1,300
c) 1,250
d) 1,150

Ques 7.

Find the future value of an annuity of ₹5,000 made annually for 6 years at interest rate 12% compounded annually, if $(1+0.12)^6 = 1.9738$

a)	₹45,575
b)	₹40,575
c)	₹39,465
d)	₹37,868

Ques 8.

If the interest rate on a loan is 1% per month. The effective annual rate of interest is:

a)	12%
b)	12.36%
c)	12.68%
d)	12.84%

Ques 9.

A random variable has the following probability distribution :	А	random	variable	has	the	follow	wing	probab	oility	distril	bution :	,
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Х	2	3	5
Р	Κ	2K	2K
Find K			

Find K.

a) 1/3
b) 2/5
c) 1/5
d) 2/3

Ques 10.

A number is selected at random from the set { 1, 2,, 99}. The probability that it is divisible by 9 or 11 is _____.

a) 19/100

b) 19/99

c) 10/100

d) 10/99

Ques 11.

The coefficient of the range of the data: 7, 8, 4, 1, 9, 12, 18, 16, 94, 3, 5, -6 is

a) 133.6

b) 163.3

c) 166.3

d) 113.6

Ques 12.

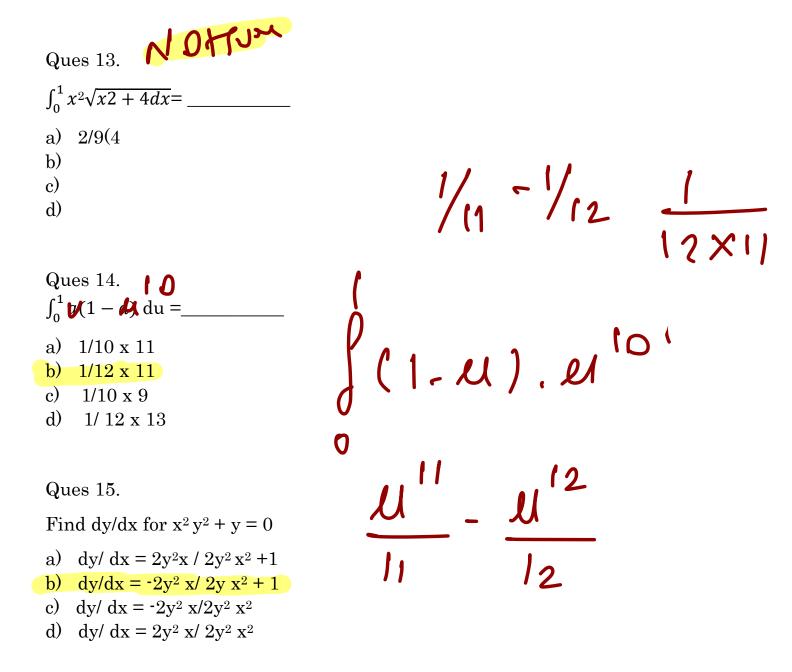
Two coins are tossed. Define the event $A = \{$ "the first toss is head" $\}, A_2 = \{$ number of heads is 2 $\}; A_1 = \{$ number of head is 1 $\}; A_0 = \{$ number of head is 0 $\}$ and $A_3 = \{$ "both outcomes are alike" $\}$. The event A is independent of _____.

a) A_3

b) A_2

c) A_0

d) A_1 and A_0 both



Ques 16.

Which of the following measure of central tendency will be unaffected if the lowest and highest observations are removed?

- a) Mean
- b) Mode
- c) Median
- d) Range

Ques 17. Which sampling is based on the discreation of the sampler?

- a) Systematic
- b) Multi-stage
- c) Stratified
- d) Purposive

Ques 18.

Which of the following is not a type of sampling?

- a) Probability
- b) Non-Probability

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c) Stand-Alone
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d) Mixed

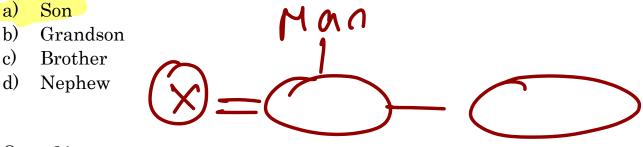
Ques 19.

An ogive is used to represent:

- a) The frequency of each data point
- b) The number of data points falling below a specific value.
- c) The proportion of data points falling below a specific value
- d) The relationship b/w two variables.

Ques 20.

Pointing to a photograph, Ms X says, "This man's son's sister is my sister-in-law." How is the Ms. X's husband related to the man in the photograph?



Ques 21.

Consider the relations : Raja is husband of Devi; Karan is the father of Gopal; Arjun is the son of Shobha; Ashok is brother of Shobha, Arjun's father Karan is the son-in-law of Devi. How is Raja related to Ashok (20) = 200

Shoba

LIJI

Aswa

a) Father

- b) Uncle
- c) Son-in-law
- d) Grandfather

Ques 22.

A, B, C, D, E and F are standing in circle talking, facing inward. E is right to C who is standing 3 places away from D. A is standing 3 peats away from P.

Which of the following has to be true?

- a) A is standing opposite to C
- b) A is standing next to E
- c) A is standing next to D
- d) A is standing next to B

Ques 23.

X, A male, introduces Y saying, "He is the husband of the grand-daughter of the father of my father". How is Y related to X?

E

- a) Brother
- b) Father
- c) Brother-in-law
- d) Father-in-law

Ques 24.

Ram borrowed ₹5,000 at 12.5% p.a compound interest. The money was repaid after 3 years. The total interest paid by him approximately is ______ if ${1+.0.125}^{3}=1.4238$

- a) ₹2,119
- b) ₹2,200
- c) ₹2,000
- d) ₹2,500

Ques 25.

A person invests in fund that pays 4% p.a for 4 years. The future value of current $\mathbf{\xi}_{4,000}$ would be $\mathbf{\xi}_{-----}$.

- a) ₹3,419
- b) ₹4,679
- c) ₹4,866
- d) ₹3,287

Ques 26.

What is the present value of ₹5,000 to be obtained after 6 years if the interest rate is 5% p.a?

- ₹3,731 a) b)
- ₹3,553
- ₹3,384 c)
- d) ₹3,223

Ques 27.

Find the effective rate of interest if an amount of ₹40,000 deposited in a bank for 1 year at the rate of 10% compounded semi-annually.

- a) 10.20% b) 10.05%
- 10.25% c)
- d) 10.10%

Ques 28.

For the first 20 natural number the standard deviation deviation is _____.

a) 5.77 b) 7.755.64c) d) 6.54

Ques 29.

If Mean Deviation about Arithmetic Mean is 1.78 and Arithmetic Mean is 3.50 then coefficient of Mean Deviation about Arithmetic Mean is

a)	50.85
b)	44.33
c)	52.65
d)	51.85

Ques 30

If Mean of a data set is 22 and Median is 22.33 then Mode is

- a) 21
- b) 21.34
- c) 22.99
- d) 21.54

Ques 31.

If Arithmetic Mean and coefficient of variation of y are 5 and 20 respectively, the variance of $12\mathchar`-3y$

- <mark>a) 9</mark> b) 81
- c) 3
- d) 100

Ques 32.

A histogram and a pie chart represent the same data on monthly expenses of a household. Which statement is most likely true?

- a) The histogram only shows the frequency of each expenses category, while the pie chart shows the proportion of each category
- b) Both the histogram and pie chart show the frequency of each expenses category
- c) Both the histogram and pie chart show the proportion of each expenses category
- d) Pie charts are always better than histograms for representing expenses

Ques 33.

Which of the following measure of central tendency depends on the position of the observation?

- a) Mean
- b) Median
- c) Mode
- d) Harmonic Mean

Ques 34.

The following set of data cannot be presented in a table.

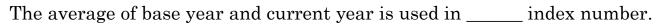
- a) The heights of students described in centimeters
- b) The weights of candidates expressed in kg
- c) The amount of rainfall opined as "medium", "average", "heavy", etc
- d) The number of bills per day cleared by an auditor in a month

Ques 35.

According to the empirical rule, if the data form a "bell-shaped" distribution, then the maximum and minimum frequencies occur at ______ & _____.

- a) Middle, left end
- b) Middle, right end
- c) End, middle
- d) Middle, ends

Ques 36.



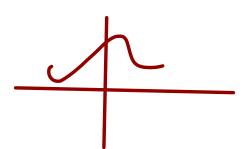
- a) Lasperyre's
- b) Paasche's
- c) Fischer's Ideal
- d) Marshall-Edgeworth

Ques 37.

If Cov(X,Y) = -2.15, $S_x=1.30$, Sy = 2.50 then correlation Coefficient r is

a) -0.66 b) 0.66

- c) 0.76
- d) 0.99



Ques 38.

For a group of 10 students the sum of squares of difference in ranks for Physics and Chemistry marks was 60, what is the value of rank correlation coefficient.(Choose the nearest value)

0.636 a)

- b) 0.725
- c) 0.698
- d) 0.842

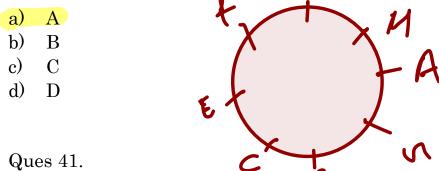
Ques 39.

Spearman's Correlation Coefficient is used to check.

- a) The scattering of the data
- b) The relationship in variables
- The median of a data c)
- d) The range of a data

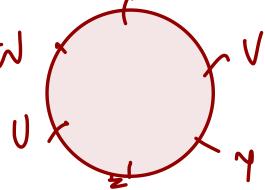
Ques 40.

Eight friends A, B, C, D, E, F, G and H are sitting around a circular table facing the centre. A is sitting two places to the right of B, who is sitting directly opposite D. C is sitting to immediate left of B and to the immediate right of E. F. who is opposite to G, is not sitting next to , Who is sitting to the immediate left of H?



The presons named U, V, W, X, Y and Z are sitting along the circumstance of a round table. The are facing the center of the round table. Given X is the third left of Z and U is the second right of X, W is this to Y's right. Then V is sitting immediate left to

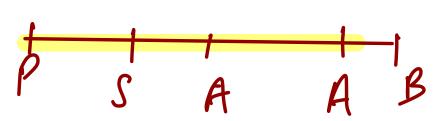
- a) Y
- b) U
- **c**) W
- d) Х



Ques 42.

5 person are standing in a line. The 2 persons at the extreme ends are a professor and a business man. An advocate is standing to the right of a student. An author is to the left of the business man Counting from the Professor's end the author is at which place?





Ques 43.

The difference b/w the compound interest amount and simple interest amount for a period of two years, at same interest rate r, is _____.

- a) P^*r^2
- b) P*r/2
- c) P*2*r
- d) $P^{2*}r$

Ques 44.

A senior typist can type five reports and a junior typist can type 3 reports per day. But the management needs to complete at least 30 reports in a day. If S and J denote the number of senior and junior typists assigned for the work. Which of the following inequality represents the constraint?

 $5S + 3J \le 30$ 3S + 5J > 35 $5S + 3J \ge 30$ 3S + 5J < 30

Ques 45.

Given the constraints, $x \le 3$, $y \le 4$ and $4x + 3y \le 12$, the point ______ is in the feasible region. (Select from the below given list)

- a) (3,4)
 b) (2,4)
- c) (2,1)
- d) (1,1)

Ques 46.

An amount ₹ 4,500 becomes ₹7,200 in two years at a simple interest rate of :

- a) 15%b) 25%
- c) 30%
- d) 40%

Ques 47.

The mean of a set of 20 observations in 18.3. The mean is reduced by 0.6 when a new observation is added to the set. The new observation is:

- a) 17.6
- b) 18.9
- c) 5.7d) 24.6

Ques 48.

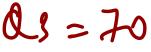
3 SPREAD= 12,6,

Consider the data sets : $X = \{-6, 2, -2, 6\}$, $Y = \{4, 8, 2, 6\}$, $Z = \{103, 100, 102, 101\}$. Let S_x , S_y , S_z be the standard deviation of the sets X, Y and Z respectively. We have the relations.

- a) $S_x < S_y < S_z$
- b) $S_z < S_y < S_x$
- c) $S_z < S_x < S_y$
- d) $S_x < S_z < S_y$

Ques 49.





If in a data set, 25% of values are smaller than 30 and one-fourth of values are larger than 70, then the coefficient of quartile deviation is _____ %.

a)	40		•
b)	30	ЧO	XID
c)	70	γU	
d)	50		
		00	

Ques 50.

If there are two groups containing 40 and 30 observations and have arithmetic means as 50 & 60, then the combined arithmetic mean is

a) 55.48
b) 56.35
c) 54.28
d) 50.28

Ques 51.

If the arithmetic mean of two numbers is 10 and the geometric means is 6, then the difference in the numbers is

a) 12
b) 14
c) 16
d) 8

Ques 52.

In an arithmetic progression , the seventh term is x, and $(x\!+\!7)^{\rm th}$ term is zero. Then

Xth term is

a) 6
b) 7
c) 8
d) 10

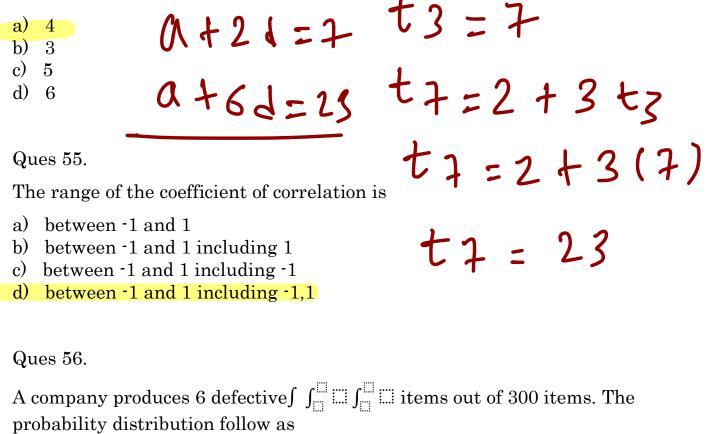
Ques 53.

If the second and eight terms of an arithmetic progression (AP) are equal to constant a, then the sum of first n terms of this AP is equal to

a) na
b) a/n
c) 2n + n(a-1)
d) n + a(n-1)

Ques 54.

The 3rd term of arithmetic progression is 7 and seventh term is 2 more than thrice of third term. The common difference is



- a) binominal distribution
- b) normal distribution
- c) poisson distribution
- d) standard normal distribution

Ques 57.

The mean of poission distribution is 4, the probability of two-successes is

a) 8/e⁴

- b) $4/e^4$
- c) $16/e^4$
- d) $8/e^2$

Ques 58.

If the regression lines are 3x - 4y + 8 = 0 and 4x - 3y = 1, then the correlation coefficient between x and y is_____

- a) 3/4
- b) 3/8
- c) 4/8
- d) 1/4

Ques 59.

A car starts from a point, runs 20 kms towards north, turns right and runs 35 kms, turns right again and runs, which is the direction now it is facing?

NRRJS

- a) North
- b) South
- c) East
- d) West

Ques 60.

Shyam walks 12m south from his house, turns left and walks 20m, again turns left and walks 45m, then turns right and walks 10m to reach coffee shop. In which direction is coffee shop from his house?

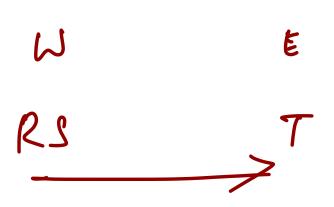
- a) South West
- b) East
- c) North East
- d) North

Ques 61.

If shyam sees the rising sun behind the tower and setting sun behind the railway station from his house. What is the direction of tower from the railway station?

N33 E30

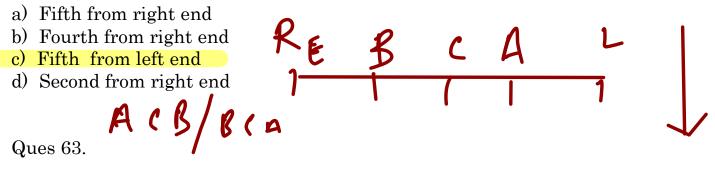
- a) South
- b) North
- c) West
- d) East



S12 E20 NY5 E10

Ques 62.

Five players named as A,B,C,D and E are sitting on a bench, facing south and are waiting to be interviewed by a selector, the person c is an immediate neighbor of both A and B, the person A is the fourth person from right end, if E is to the right of B, then where is E sitting?



The equation $x^{3-3}x^{2-4}x^{-1}2=0$ has three real roots. They are,

- a) -2, 2, 3 c) 2,-2,-3
- d) -2,2,-3

X+B+y = 3

Ques 64.

If α and β are roots of the equation $ax^2 + bx + c = 0$, then the equation whose roots are $1/\alpha$ and $1/\beta$ is

a) $cx^{2} - bx + a = 0$ b) $cx^{2} + bx + a = 0$ c) $x^{2} + bx + a = 0$ d) $x^{2} + bx - = 0$

Ques 65.

If α and β are roots of the equation $x^2 \rightarrow 8x \rightarrow 12 = 0$, then $1/\alpha + 1/\beta =$ _____

- a) 2/3
- b) 2/4
- c) 3/4
- d) 4/3

Ques 66.

The roots of the equation $x^3 - 7x + 10 = 0$ are:

- a) 2 and 5
- b) -2 and -5
- c) 2 and -5
- d) -2 and 5

Ques 67.

Which index number formula satisfies both the time reversal and factor reversal tests?

- a) Fisher's ideal index
- b) Laspeyres' index
- c) paasche's index
- d) Marshall-Edgeworth index

Ques 68.

What of the followings is not a test of adequacy in the context of index numbers?

- a) Unit test
- b) Square test
- c) Circular test
- d) Factor reversal test

Ques 69.

If the prices of all commodities in the base year are twice the values of the respective commodities in the current year, then the fisher's ideal index number is equal to;

- a) 200
- b) 50
- c) 400
- d) 25

Ques 70.

Which index number formula does not satisfy the time reversal test?

- a) Fisher's ideal index and Laspeyre's index
- b) Laspeyre's index and Paasche's index
- c) Paasche'sindex and Fisher's ideal index
- d) Laspeyres' index, fisher's ideal index and Paasch's index

Ques 71.

A user wants to create a password using 4 lowercase letter (a-z) and 2 uppercase letter (A-Z). No letter can be repeated in any form. In how many ways can the password be created if the password must start with an uppercase letter?

- a) 26 x 25 x 21 x 23 x 22 x 5 x 21
- b) 26 x 25 x 24 x 23 x 22 x 2 x 21
- c) 26 x 5 x 25 x 21 x 23 x 2 x 22 x 21
- d) 6 x 26 x 25 x 24 x 23 x 22 x 21

26×25c,×5 24 Py

Ques 72.

In how many ways can 5 boys and 3 girls sit in a row so that no two girls are together

51 x 6 pz

- a) 14,400
- b) 14,000
- c) 14,425
- d) 12,400

Ques 73.

In how many ways the letter of the word "STADIUM" be arranged in such a say that the vowels all occur together?

- a) 7!/3!
- b) 5! 4!
- c) 5! 3!
- d) 7! 3!

Ques 74.

How many ways can 5 different trophies can be arranged on a shelf if one particular trophy must always be in the middle?

- a) 24
- b) 120
- c) 48
- d) 144

5 | x 3 !

Ques 75.

For a normal distribution the ratio of mean deviation to the standard deviation Is

a) 0.4

b) 0.6

c) 0.8

d) 1.0

Ques 76.

The following table gives the cumulative probability function of x;

X	0	1	2	3	4	5
Pr(x)	6/30	5/30	13/30	1/15	1/10	1/30

The expectation X is_____

a) 1.8

b) 1.7

c) 1.5

d) 1.6

Ques 77.

N | Q = 0.2 - 0.2 - 0.6

For a binomial distribution, the variance is 0.2 and the mean is 0.6 the probability of **92+117** 3 successes out of a trial of 5 is _____

 $\frac{1}{13}, Q = \frac{2}{3}$ a) 80/3 $\left(\frac{1}{2}\right)^{3}\left(\frac{1}{2}\right)$ S(3

Ques 78.

Ram started walking from A, 200 m towards north to reach B. then he turned right and walks 300m to reach C. then he turns right and walks 350m to reach D. then he turns left and walks 150m to reach E, finally, he turns left and walks 150 m, he arrived at the point F. what is the distance between point A and F?

- b) 200 m
- c) 250 m
- d) 300 m

a) 450 m

Ques 79.

What comes next in the series; FMAMJJASON?

a) DJM

- b) DBM
- c) DJF
- d) DDJ

Ques 80.

In a series of letter , which one is the odd one out ; BDFH, JLNP, RTVX, ZBDE?

- a) BDFH
- b) JLNP
- c) RTVX
- d) ZBDE

Ques 81.

Roy walks 2 kms to west then turns and starts walking south East he walks 3 kms then he turns north and walks 5 kms then again he turns east and walks 2 kms finally, he turns south and walks 6 kms. In which direction is he form the starting point?

- a) South West
 b) South East
 c) North East
 d) north West
 Ques 82.
 If log_ab=3 and log_bc=2, then log c is
 a) 5
 b) 6
- c) 9
- d) 1

Ques 83.

If 2^x = 4^y = 8^z and 1/2x + 1/4y + 1/6z = 24/7, then the value of z is a) 7/16 b) 7/32 c) 7/48 d) 7/64 Ques 84.

A fraction becomes 1, when 3 are added to the numerator and 1 is added to the denominator but when the numerator and denominator are decreased by 2 and 1 respectively it becomes 1/2 the denominator of the fraction is:

a) 5

- b) 6
- c) 7
- d) 8

Ques 85.

If the four numbers 1/4, 1/6, 1/10, and 1/X are proportional then what is the value of x?

- a) 14
- b) 15
- c) 10
- d) 1/12

Ques 86.

If (x)=(x-1) x (x+1), then $\frac{dy}{dx} =$ _____ a) $3x^2 - 1$ b) $3x^2 + 1$ c) $x^2 \cdot 3$ d) $x^2 + 3$ Ques 87. The $\lim_{x \to 2} \frac{x^2 - 4x + 4}{x - 2} =$ _____ a) 0 b) 1 c) 2 d) 0.5 Ques 88.

Consider the following relations on A= $\{1,2,3\}$, R= $\{(1,1), (1,2), (1,3), (3,3)\}$ S= $\{(1,1), (1,2), (2,1), (2,2), (3,3)\}$ T= $\{(1,1), (1,2), (2,2), (2,3)\}$ and empty set which one of theses forms an equivalence relation?

- a) R
 b) S
 c) T
- d) *φ*

Ques 89.

If $f(x) = (x+1)^{x+1}$, then find f(0)

a) 0
b) 1
c) -1

d) 2

Ques 90.

You bought a painting 10 years ago as an investment, You originally paid ₹ 85,000 for it.

If you sold it for ₹ 4,84,050, what was your annual return on investment?

a) 47%b) 4.7%c) $\frac{10\%}{12.8\%}$ 19.7.

Ques 91.

What is the present value of an investment that pays \gtrless 400 at the end of three years and \gtrless 500 at end of 6 years?

a) ₹ 320 b) ₹ 335	$400 = P((+i)^{3})$
 c) ₹ 340 d) ₹ 280 	$500 = P(1+i)^{6}$
400 = PX	$\frac{5}{4}(1+i)^{3} = 5/4$
1 = J 12	<i>/ 1</i>

Ques 92.

At 8% compound annually, how long will it take ₹ 750 to double?

- a) 6.5 years
- b) 48 months
- c) 9 years
- d) 12 years

Ques 93.

You are considering two investments: Investments A yields 10% compounded quarterly. Investments B yields r% compounded semi-annually. Both investments have equal annual yields. Find r,

- a) 19.875%
- b) 10%
- c) 10.38%
- 10.125%d)

Ques 94.

From a bag containing red, 5 blue and 6 white caps, two caps are drawn without replacement, What is the probability that the caps are of different colours?

a) 74/105

- b) 37/105
- c) 94/105
- d) 31/105

 $M_{c_1} \times f_{c_1} \neq f_{c_1} \times f_{c_1} \times f_{c_1} \neq M_{c_1} \times f_{c_1}$ 1502

Ques 95.

A question in statistics is given to three students A, b and c. Their chances of solving the question are 1/3, 1/5 and 1/7 respectively. The probability that the question would be solved is $|-2/3 \times 1/3 \times 1/3 = 1.8/3 = 1.6/3 = 1.9/3 =$

- a) 19/35
- b) 16/35
- c) 1/105
- d 104/105

Ques 96.

A company produces two types of products A and B. The probability of a defective product in type A is 0.05 and in type B in 0.03. If the company produces 60% type A and 10% type B, what is the probability of a randomly selected product being defective?

a) 0.042

- b) 0.03
- c) 0.048
- d) 0.052

$0.60 \times 0.07 + 0.4 \times 0.03$ 0.042

Ques 97.

In an certain code TEACHER is written as VGCEJCT, How is CHILDREN written in that code.

- a) EJKNEGTP
- b) EGKNFITP
- c) EJKNFGTO
- d) EJKNFTGP

Ques 98.

If a function is given by $f(x) = e^{3x}$, What is the derivative of the function?

- a) $3e^{3x}$
- b) e^{3x}
- c) $3xe^{3x}$
- d) $3e^{3x} + 3$

Ques 99.

Find the missing value in the series : 51, 52, 60, 87, 151,___, 492

A) 195
b) 276
c) 317
d) 420

Ques 100.

In a certain code INACTIVE is written as VITCANIE, How is COMPUTER written in the same code

- a) PMOCRETU
- b) ETUPMOCR
- c) UTEPMOCR
- d) MOCPETUR