

CA – Foundation

Paper 3: BMLRS

Chapter 1

Ratio, Proportion, Indices and Logarithms

Name: _____

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May 2018

Task 1

P, Q and R three cities. The ratio of average temperature between P and Q is 11: 12 and that between P and R is 9:8. The ratio between the average temperature Q and R

- (a) 22.27
- (b) 27.22
- (c) 32: 33
- (d) none

Task 2

The third proportional between (a^2-b^2) and $(a+b)^2$ is :

- (a) $\frac{a+b}{a-b}$
- (b) $\frac{a-b}{a+b}$
- (c) $\frac{(a-b)^2}{a+b}$
- (d) $\frac{(a+b)^2}{a-b}$

Task 3

The value of $\log_{0.1} 0.001 =$

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

Task 4

if $\log_4 x = -3/2$. Then x is

- (a) 1/8
- (b) 1/4
- (c) 1/2
- (d) 1/3

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Task 5

For $p, q, r, s > 0$ the value of each ratio is

$$\frac{p}{q+r} = \frac{q}{r+s} = \frac{r}{s+p} = \frac{s}{p+q}$$

- (a) $\frac{1}{2}$
- (b) $\frac{1}{3}$
- (c) $\frac{1}{4}$
- (d) 1

Task 6

Let x, y and z are three positive numbers and $P = \frac{x+y+z}{2}$; if $(p-x):(p-y):(p-z) = 3:5:7$ then the ratio of $x:y:z$ is

- (a) 4:5:6
- (b) 6:5:4
- (c) 3:5:7
- (d) 7:5:3

Task 7

If $\log_7 \log_5 (\sqrt{x+5} + \sqrt{x}) = 0$, the value of x is

- (a) 0
- (b) 1
- (c) $\frac{1}{4}$
- (d) 4

Task 8

For $a, b, c > 0$ the value of each ratio is

$$\frac{a}{b+c} = \frac{b}{c+a} = \frac{c}{a+b}, \text{ then find the value of each ratio if } a+b+c \neq 0$$

- (a) $\frac{1}{2}$
- (b) $\frac{1}{3}$
- (c) $\frac{1}{4}$
- (d) 1

Task 9

If $\frac{x}{b+c-a} = \frac{y}{c+a-b} = \frac{z}{a+b-c}$, then find the value of $(b-c)x + (c-a)y + (a-b)z =$

- (a) 0
- (b) -1
- (c) +1
- (d) $\frac{1}{2}$

Task 10

$x:y:z = 2:3:5$. If $x+y+z = 60$ then the value of z is

- (a) 30
- (b) 15
- (c) 9
- (d) 12

Task 11

Simplify $\log_2 3 \log_3 4 \log_4 5 \log_5 6 \log_6 7 \log_7 8$

- (a) 2
- (b) 3
- (c) 4
- (d) $\frac{3}{2}$

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Task 12

The ratio compounded of 2:3, 9:4, 5:6 and 8: 10 is

- (a) 1: 1
- (b) 1:5
- (c) 3: 8
- (d) none of these

Task 13

The sub-triplicate ratio of 8: 27

- (a) 27: 8
- (b) 24: 81
- (c) 2: 3
- (d) none of these

Task 14

If $\frac{p}{q} = \frac{r}{s} = \frac{p-r}{q-s}$, the process is called

- (a) Subtrahendo
- (b) Componendo
- (c) Alternendo
- (d) none of these

Task 15

The value of $\left(\frac{x^a}{x^b}\right)^{(a^2+ab+b^2)} \times \left(\frac{x^b}{x^c}\right)^{(b^2+bc+c^2)} \times \left(\frac{x^c}{x^a}\right)^{(c^2+ca+a^2)}$

- (a) 1
- (b) 0
- (c) -1
- (d) none of these

Task 16

If $a = \log_{12} 24$, $b = \log_{36} 24$, $c = \log_{48} 36$ then prove that $1 + abc =$

- (a) $2bc$
- (b) $2ca$
- (c) $2ba$
- (d) $3bc$

Task 17

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

- (a) 25
- (b) 26
- (c) 27
- (d) 30

Task 18

If $x:y:z = 2:3:5$ if $x + y + z = 60$, then the value of z

- (a) 30
- (b) 15
- (c) 9
- (d) 12

Task 19

The ratio of two numbers is 15: 19. If a certain number is added to each term of the ratio it become 8: 9. What is the number added to each of the ratio?

- (a) 6
- (b) 15
- (c) 17
- (d) 23

Task 20

If $\frac{a}{3} = \frac{b}{4} = \frac{c}{5}$ then $\frac{2a + 3b + 2c}{4a - b + 2c}$ is

- (a) $\frac{11}{19}$

(b) $\frac{17}{9}$

(c) $\frac{19}{9}$

(d) $\frac{19}{7}$

Task 21

Simplify $\frac{2^n + 2^{n-1}}{2^{n+1} + 2^n} =$

(a) 2^{n+2}

(b) 2^n

(c) 2

(d) $\frac{1}{2}$

Task 22

If $2^a = 3^b = 12^c$ then $\frac{1}{a} + \frac{1}{b} =$

(a) $\frac{1}{c}$

(b) $\frac{1}{c} - \frac{1}{a}$

(c) $-\frac{1}{c}$

(d) 0

Task 23

The value of $\log_{64} 512$ is

(a) 9

(b) $9/2$

(c) $9/4$

(d) $3/2$

Task 24

The value of $(\log_b a \log_c b \log_a c)^3 =$

(a) 1

(b) 3

(c) $(\log_b C)^3$

(d) $(\log_c b)^3$

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Task 25

The ratio of the earnings of two persons 3:2. If each saves $\frac{1}{5}$ th of their earnings, the ratio of their savings.

- (a) 2:3
- (b) 3:2
- (c) 4:5
- (d) 5:4

Task 26

The Third Proportional to 15 and 20 is

- (a) $\frac{80}{3}$
- (b) 80
- (c) $\frac{80}{7}$
- (d) 120

Task 27

If $\log_9 x + \log_3 x = \frac{3}{2}$ then x is

- (a) 0
- (b) 1
- (c) $\frac{9}{4}$
- (d) 3

Task 28

If $x+y$, $y+z$, $z+x$ are in the ratio 6:7:8 and $x + y + z = 14$ then the value of x is

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

Task 29

If $2^x = 3^y = 6^z$ then $\frac{1}{x} + \frac{1}{y} =$

(a) $\frac{1}{z}$

(b) $\frac{1}{z} - \frac{1}{x}$

(c) $\frac{1}{z} + \frac{1}{x}$

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Task 30

The ratio of the prices of two houses was 16: 23. Two years later when the price of the first has increased by 10% and that of the second by Rs. 477, the ratio of the prices becomes 11: 20. Find the original prices of the two houses.

- (a) Rs. 848, Rs. 1,219.
- (b) Rs. 838, Rs. 1,119.
- (c) Rs. 828, Rs. 1,219.
- (d) Rs. 848 Rs. 1,229.

Task 31

If $a : b = 3 : 4$, the value of $(2a+3b) : (3a+4b)$ is

- (a) 54: 25
- (b) 8: 25
- (c) 17: 24
- (d) 18: 25

Task 32

$5^{16} + 125^5$ is divisible by which of the following

- (a) 5
- (b) 6
- (c) 8
- (d) 9

Task 33

Given that $\log_{10} 2 = x$ and $\log_{10} 3 = y$, the value of $\log_{10} 60$ is expressed as

- (a) $x - y + 1$
- (b) $x + y + 1$
- (c) $x - y - 1$
- (d) none of these

Task 34

If $pqr = a^x$, $qrs = a^y$ and $rsp = a^z$, then find the value of $(pqrs)^{1/2}$

(a) a^{x+y+z}

(b) $a^{\sqrt{x+y+z}}$

(c) $a^{\sqrt[4]{x+y+z}}$

(d) $(a^{x+y+z})^{1/4}$

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Task 35

If $x : y = 2 : 3$, then find $(5x+2y) : (3x-y)$

- (a) $13/3$
- (b) $16/3$
- (c) $19/3$
- (d) $7/3$

Task 36

A bag contains ₹187 in the form 1 rupee, 50 paise and 10 paise coins in the ratio 3:4:5. Find the number of each type of coins.

- (a) 102, 136, 170
- (b) 136, 102, 170
- (c) 170, 102, 136
- (d) none

Task 37

$\log_e x + \log(1+x) = 0$ is equivalent to

- (a) $x^2+x+e = 0$
- (b) $x^2+x- e = 0$
- (c) $x^2+x+1 = 0$
- (d) $x^2+x-1 = 0$

Task 38

The ratio of the speed of the two trains is 2: 5. If the distances they travel are in the ratio 5: 9, find the ratio of times taken by them.

- (a) 2: 9
- (b) 18: 25
- (c) 25: 18
- (d) 10: 45

Task 39

If $x = 3^{1/4} + 3^{-1/4}$ and $y = 3^{1/4} - 3^{-1/4}$, then the value of $3(x^2 + y^2)^2$ will be

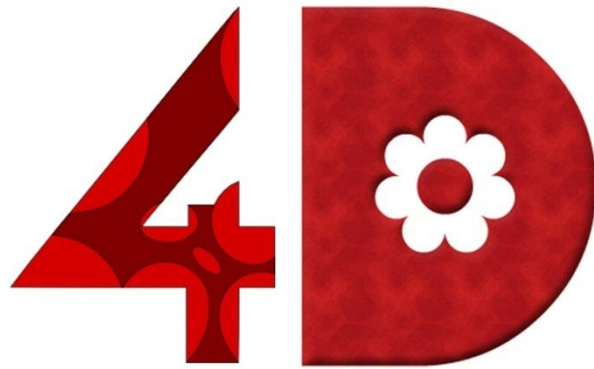
- (a) 12
- (b) 18

(c) 46

(d) 64

Solutions

Task	Solution	Task	Solution	Task	Solution	Task	Solution
1	B	33	B				
2	D	34	D				
3	A	35	B				
4	A	36	A				
5	A	37	D				
6	B	38	C				
7	D	39	D				
8	A	40					
9	A	41					
10	A	42					
11	B	43					
12	A	44					
13	C	45					
14	A	46					
15	A	47					
16	A	48					
17	B	49					
18	A	50					
19	C	51					
20	C	52					
21	D	53					
22	B	54					
23	D	55					
24	A	56					
25	B	57					
26	A	58					
27	B	59					
28	B	60					
29	A	61					
30	A	62					
31	D	63					
32	B	64					



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Chapter 2
Unit 1: Equations

Name: _____

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May 2018

Task 1

A number consists of two digits. The digit 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

Task 2

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

Task 3

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) $y=3x+1$

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Task 4

if $x = \sqrt{\sqrt{6} + 6 + (\sqrt{7 + 2\sqrt{6}})} - \sqrt{6}$ then the value

- (a) 1
- (b) 2
- (c) 3
- (d) 6

Task 5

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

Task 6

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

Task 7

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

Task 8

The roots of the equation $x^3 + x^2 - 20x = 0$

- (a) 0, 4,5
- (b) 0,-4,5
- (c) 0,4, -5
- (d) 0, -4, -5

Task 9

Find the quadratic equation Sum of whose roots is 3 and the Sum of the cubes of roots is 7

- (a) $21x^2 - 147x + 20 = 0$
- (b) $21x^2 + 147x + 20 = 0$
- (c) $21x^2 - 147x - 20 = 0$
- (d) $-21x^2 - 147x + 20 = 0$

Task 10

Find the quadratic equation given that $5 + \sqrt{3}$ is one root

- (a) $x^2 - 10x + 22 = 0$
- (b) $x^2 + 10x - 22 = 0$
- (c) $x^2 - 10x - 22 = 0$
- (d) $-x^2 - 10x + 22 = 0$

Task 11

If α and β are the roots of the equation $3x^2 - 5x + 3 = 0$ then the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$ is

- (a) $7/9$
- (b) $-7/9$
- (c) $8/9$
- (d) $-8/9$

Task 12

The point of Intersection between the straight lines $3x + 2y = 6$ and $3x - y = 12$ lie in

- (a) 1st quadrant
- (b) 2nd quadrant
- (c) 3rd quadrant
- (d) 4th quadrant

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Task 13

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

Task 14

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) $\alpha x^2 - \alpha^2 x + \alpha = 0$
- (c) $\alpha x^2 - (\alpha^2 + 1)x + \alpha = 0$
- (d) none of these

Task 15

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) $\left(\frac{49}{144} + \frac{144}{49}\right)$
- (b) $\left(\frac{7}{12} + \frac{12}{7}\right)$
- (c) $\left(-\frac{91}{12}\right)$
- (d) none of these

Task 16

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

Task 17

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

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Task 18

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

- (a) Rs.130
- (b) Rs. 120
- (c) Rs.150
- (d) Rs.140

Task 19

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

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

Task 20

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

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Task 21

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) $\frac{41}{960}$

Task 22

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

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

Task 23

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

- (a) $k = 4$
- (b) $k = 3$
- (c) $k = 2$
- (d) $k = 1$

Task 24

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

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

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Task 25

Find the value of $(x + y)$, if $\left(x + \frac{y^3}{x^2}\right)^{-1} - \left(\frac{x^2}{y} + \frac{y^2}{x}\right)^{-1} + \left(\frac{x^3}{y^2} + y\right)^{-1} = \frac{1}{3}$

- (a) $1/3$
- (b) 3
- (c) $\frac{1}{2}$
- (d) 2

Task 26

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

- (a) -2
- (b) 6
- (c) 7
- (d) 10

Task 27

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

Task 28

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) $k = \pm 5$

Task 29

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) $x^2 - 4x + 1 = 0$

Task 30

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

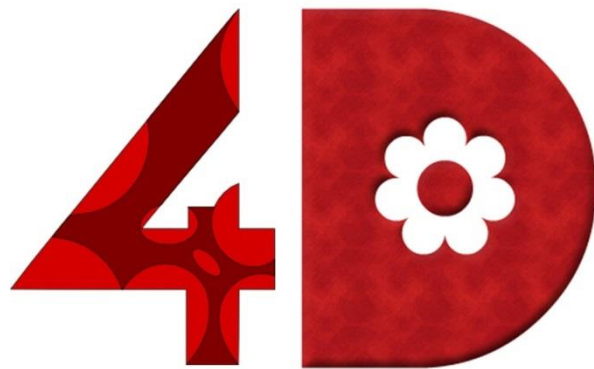
(b) ₹ 840

(c) ₹ 1680

(d) ₹ 3360

Solutions

Task	Solution	Task	Solution	Task	Solution	Task	Solution
1	C						
2	C						
3	C						
4	A						
5	C						
6	A						
7	D						
8	C						
9	A						
10	A						
11	A						
12	D						
13	A						
14	A						
15	C						
16	B						
17	A						
18	A						
19	A						
20	A						
21	A						
22	A						
23	A						
24	B						
25	B						
26	A						
27	B						
28	C						
29	B						
30	B						
31							
32							



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Paper 3: BMLRS

Chapter 2
Unit 2: Matrices

Name: _____

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Task 1

Two matrices A and B are multiplied to get AB if

- (a) both are rectangular
- (b) both have same order
- (c) no of columns of A is equal to rows of B
- (d) no of rows of A is equal to no of columns of B

Task 2

If $|A| = 0$, then A is

- (a) zero matrix
- (b) singular matrix
- (c) non-singular matrix
- (d) 0

Task 3

If the order of matrix A is $m \times p$. And the order of B is $p \times n$. Then the order of matrix AB is?

- (a) $m \times n$
- (b) $n \times m$
- (c) $n \times p$
- (d) $m \times p$

Task 4

if $A = \begin{pmatrix} 2i & 3i \\ 2i & -i \end{pmatrix}$ ($i^2 = -1$) then $|A| = ?$

- (a) 2
- (b) 8
- (c) 4
- (d) 5

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Task 5 (Question is wrong)

For the value of x will the matrix $\begin{bmatrix} 3 & 1 & 2 \\ x & 2 & 4 \\ 2 & 3 & 6 \end{bmatrix}$ become singular:

- (a) 4
- (b) 6
- (c) 8
- (d) 12

Task 6

Transpose of a rectangular Matrix is

- (a) Rectangular Matrix
- (b) Diagonal Matrix
- (c) Square matrix
- (d) Scalar Matrix

Task 7

What's a, if $A = \begin{pmatrix} 2 & 3 \\ 4 & a \end{pmatrix}$ is a singular matrix ?

- (a) 5
- (b) 6
- (c) 7
- (d) 8

Task 8

If $A = \begin{pmatrix} 5 & -2 \\ -1 & 3 \end{pmatrix}$, then Adjoint of Matrix A

(a) $\begin{pmatrix} 3 & -2 \\ -1 & 5 \end{pmatrix}$

(b) $\begin{pmatrix} 5 & 2 \\ -1 & 3 \end{pmatrix}$

(c) $\begin{pmatrix} 3 & -2 \\ 1 & 5 \end{pmatrix}$

(d) $\begin{pmatrix} 3 & 2 \\ 1 & 5 \end{pmatrix}$

Task 9

If $A = \begin{pmatrix} 5 & x \\ y & 0 \end{pmatrix}$ and $A = A^T$, then

(a) $x = 0, y = 5$

(b) $x = y$

(c) $x + y = 5$

(d) none of these

Task 10

If $A = \begin{pmatrix} 2i & 3i \\ 2i & i \end{pmatrix}$ (here $i^2 = -1$) then $|A| =$

(a) 2

(b) 8

(c) 4

(d) 5

Task 11

Let $A = \begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$; $B = \begin{pmatrix} 1 & 5 \\ 6 & 7 \end{pmatrix}$ then the value $3A - B$

(a) $\begin{pmatrix} -4 & -14 \\ 9 & 11 \end{pmatrix}$

(b) $\begin{pmatrix} 4 & -14 \\ -9 & -11 \end{pmatrix}$

(c) $\begin{pmatrix} 4 & -14 \\ 9 & 11 \end{pmatrix}$

(d) $\begin{pmatrix} 5 & 4 \\ 6 & 8 \end{pmatrix}$

Task 12

$$\begin{pmatrix} a & -b \\ b & a \end{pmatrix} \times \begin{pmatrix} a & b \\ -b & a \end{pmatrix}$$

(a) $\begin{pmatrix} a^2 + b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(b) $\begin{pmatrix} -a^2 - b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(c) $\begin{pmatrix} a^2 - b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(d) $\begin{pmatrix} a^2 - b^2 & 0 \\ 0 & a^2 - b^2 \end{pmatrix}$

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Task 13

Let $A = \begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$; $B = \begin{pmatrix} 1 & 5 \\ 6 & 7 \end{pmatrix}$ then the value $A-3B$

(a) $\begin{pmatrix} -1 & -12 \\ -14 & -16 \end{pmatrix}$

(b) $\begin{pmatrix} 1 & -12 \\ -14 & 16 \end{pmatrix}$

(c) $\begin{pmatrix} -1 & 12 \\ -14 & 16 \end{pmatrix}$

(d) $\begin{pmatrix} 1 & 12 \\ 14 & 16 \end{pmatrix}$

Task 14

$$\begin{pmatrix} a & -b \\ b & a \end{pmatrix} \times \begin{pmatrix} -a & b \\ b & a \end{pmatrix}$$

(a) $\begin{pmatrix} a^2 + b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(b) $\begin{pmatrix} -a^2 - b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(c) $\begin{pmatrix} a^2 - b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(d) $\begin{pmatrix} a^2 - b^2 & 0 \\ 0 & a^2 - b^2 \end{pmatrix}$

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Task 15

If the order of matrix A is $m \times p$. And the order of B is $p \times n$. Then the order of matrix AB is ?

- (a) $m \times n$
- (b) $n \times m$
- (c) $n \times p$
- (d) $m \times p$

Task 16

if $A = \begin{pmatrix} 2i & 3i \\ 2i & -i \end{pmatrix}$, ($i^2 = -1$) then $|A| = ?$

- (a) 2
- (b) 8
- (c) 4
- (d) 5

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Task 17

if $\begin{pmatrix} x+y & 1 \\ 1 & x-y \end{pmatrix} + \begin{pmatrix} 2 & 3 \\ 2 & -4 \end{pmatrix} = \begin{pmatrix} 12 & 4 \\ 3 & 0 \end{pmatrix}$ then

- (a) $x = 7, y = -3$
- (b) $x = -7, y = -3$
- (c) $x = -7, y = 3$
- (d) $x = 7, y = 3$

Task 18

What is the value of x , if $A = \begin{pmatrix} 1 & 4 \\ 2 & x \end{pmatrix}$ is a singular matrix

- (a) 5
- (b) 6
- (c) 7
- (d) 8

Task 19

The transpose of a square matrix is a ____

- (a) null matrix
- (b) row matrix
- (c) Square matrix
- (d) Column matrix

Solutions

Task	Solution	Task	Solution	Task	Solution	Task	Solution
1	C						
2	B						
3	A						
4	B						
5							
6	A						
7	B						
8	D						
9	B						
10	C						
11	D						
12	A						
13	A						
14	B						
15	A						
16	B						
17	D						
18	D						
19	C						
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CA – Foundation

Paper 3: BMLRS

Chapter 3

Inequalities

Name: _____

Contact No: _____

Email Id: _____

May 2018

Task 1

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

- (a) $x + y \leq 100$, $4x + y \leq 100$, $x \geq 0$, $y \geq 0$
- (b) $x + y \leq 1000$, $2x + 5y < 1000$, $x \geq 0$, $y \geq 0$
- (c) $x + y > 100$, $4x + y \geq 100$, $x \geq 0$, $y \geq 0$
- (d) none of these

Nov 2018

Task 2

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

- (a) $(-2,2)$
- (b) $(0, -2)$
- (c) $(2, \infty)$
- (d) $(-2, \infty)$

Task 3

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

- (a) $y \geq x/8$
- (b) $8y \leq x$
- (c) $8y = x$
- (d) $y = 8x$

Task 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) $6x + 2y \leq 24$
- (b) $6x + 2y = 24$
- (c) $6x + 2y \geq 24$
- (d) $6x + 2y \neq 4$

Task 5

Find the truth set of $3x-6 < 3$

- (a) $\{x : x < 5\}$
- (b) $\{x : x > 5\}$
- (c) $\{x : x < 3\}$
- (d) $\{x : x \leq 3\}$

Task 6

Find the value of $\frac{x}{3} - \frac{1}{4}(x+2) > 3x - 1\frac{1}{3}$

- (a) $x < 2/7$
- (b) $x > 2/7$
- (c) $x < 3/7$

(d) $x > 4/7$

Task 7

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

- (a) $x + y \leq 100, 4x + y \leq 100, x \geq 0, y \geq 0$
- (b) $x + y \leq 1000, 2x + 5y < 1000, x \geq 0, y \geq 0$
- (c) $x + y > 100, 4x + y \geq 100, x \geq 0, y \geq 0$
- (d) none of these

Task 8

An employer recruits experienced (x) and fresh work men (y) for his firm under the condition that he can't employ more than 9 people. x and y can be related by the inequality

- (a) $x+y \neq 9$
- (b) $x+y \leq 9, x \geq 0, y \geq 0$
- (c) $x+y \geq 9, x \geq 0, y \geq 0$
- (d) none of these

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Task 9

On solving the inequalities $5x + y \leq 100$, $x + y \leq 60$, $x \geq 0$ and $y \geq 0$, 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

Task 10

Mr. A plans to invest up to Rs. 30,000 in two stocks X and Y. Stock X(x) is priced at Rs.175 and Stock Y(y) at Rs.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

Nov 2019

Task 11

The solution set of the in equation $x + 2 > 0$ and $2x - 6 > 0$ is

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

Task 12

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) $2x + y \leq 60$ and $x + 2y \geq 40$.
- (b) $2x + y \geq 60$ and $x + 2y \geq 40$.
- (c) $2x + y \leq 60$ and $x + 2y \leq 40$.
- (d) $2x + y \geq 60$ and $x + 2y \leq 40$.

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Task 13

On solving the inequalities $2x + 5y \leq 20$, $3x + 2y \leq 12$, $x \geq 0$, $y \geq 0$, 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 $(2, 3)$

Task 14

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) $5x + 3y \leq 30$
- (b) $5x + 3y > 30$
- (c) $5x + 3y \geq 30$ $x \geq 0$, $y \geq 0$
- (d) none of these

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Task 15

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

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

Task 16

The solution space of the inequalities $2x + y \leq 10$ and $x - y \leq 5$:

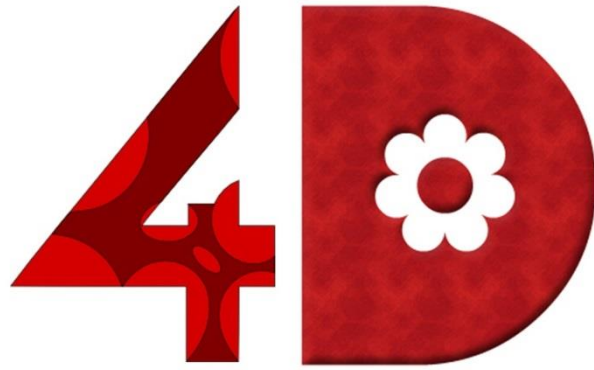
- (i) includes origin
- (ii) includes the point (4,3)

Which one is correct?

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

Solutions

Task	Solution	Task	Solution	Task	Solution	Task	Solution
1	A						
2	D						
3	A						
4	C						
5	C						
6	A						
7	A						
8	B						
9	A						
10	A						
11	B						
12	C						
13	D						
14	A						
15	B						
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CA – Foundation

Paper 3: BMLRS

Chapter 4

Time Value of Money

Name: _____

Contact No: _____

Email Id: _____

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Task 1

Future value of Ordinary Annuity

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

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

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

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

Task 2

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 %

Task 3

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

- (a) 5 years 6 months
- (b) 5 years 7 months
- (c) 5 years 5 months
- (d) none

Task 4

A sinking fund is created redeeming debentures worth Rs. 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) 12039

(d) 12035

Task 5

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

Task 6

Net Present value ≥ 0 , then

(a) Accept the Proposal

(b) Reject the proposal

(c) Not Feasible

(d) None of the above

Task 7

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

(a) 10

(b) 30

(c) 40

(d) 35

Task 8

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

(a) 10 years

(b) 12 years

(c) 13 years

(d) 14 years

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Task 9

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

- (a) 5%
- (b) 6%
- (c) 7.5%
- (d) 9%

Task 10

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

- (a) 0.25 %
- (b) 0.40%
- (c) 0.50%
- (d) 0.75%

Task 11

The simple interest of P % for P years will be Rs. P on a sum of :

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

Task 12

The compound interest on a certain sum is Rs. 209 simple interest is Rs. 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%

Task 13

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

- (a) Rs. 1,10,000
- (b) Rs. 1,00,004
- (c) Rs. 92,000
- (d) Rs. 97,000

Task 14

What principal will amount to Rs. 370 in 6 years at 8% p.a. at simple interest

- (a) Rs.210
- (b) Rs.250
- (c) Rs.310
- (d) Rs.310

Task 15

The effective rate of interest is an amount Rs. 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%

Task 16

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

- (a) Rs.10730.71
- (b) Rs.10735
- (c) Rs.10734
- (d) Rs.10237

Task 17

Rs. 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) Rs.5216.11
- (b) Rs.1917.13
- (c) Rs. 52,161.1
- (d) Rs. 19,171, 3

Task 18

The present value of Rs.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

Task 19

Suppose your father decides to gift you Rs. 5,000 every year starts from today for the next four years. You deposit the amount in 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) Rs. 17,434.25
- (b) Rs. 17,344.25
- (c) Rs.17434.52
- (d) Rs. 17,344.52

Task 20

Find the Present value of Rs.10,000 to be required after 5 years, If the Interest be 9%. Given $(1.09)^5 = 1.5386$

- (a) Rs.6500
- (b) Rs. 6499.42
- (c) Rs. 6600.52
- (d) Rs.6700.52

Task 21

Rs.500 is invested at the end of each month in 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

Task 22

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

Task 23

A sum of money placed at compound interest double itself in 3 years. In how many years will it amount

to eight times itself?

- (a) 5 years
- (b) 9 years
- (c) 8 years
- (d) 7 years

Task 24

The difference between the compound interest and simple interest on Rs. 1,000 for 2 years at the rate of 10% per annum is

- (a) Rs.40
- (b) Rs.20
- (c) Rs.30
- (d) Rs.10

Task 25

Sanjana borrows Rs.5,00,000 to buy a house. If she pays equal instalments for 20 years and 10% interest on outstanding balance what will be the equal annual installment? ($[P(20,0.10) = 8.51356]$)

- (a) Rs. 58,729.84
- (b) Rs. 58,792.54
- (c) Rs. 85,729.54
- (d) Rs. 85,792.45

Task 26

X bought a TV costing 25,000 making down payment of Rs. 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? [$P(4, 0.14) = 2.91731$]

- (a) Rs.6855.63
- (b) Rs.6850.63
- (c) Rs.6859
- (d) Rs.6871

Task 27

A machine can be purchased for Rs. 50,000. Machine will contribute Rs. 12,000 per year for the next five years. Assume borrowing cost is 10% per annum compounded annually. Determine whether machine would be purchased or not?

- (a) Purchased
- (b) Not purchased
- (c) Profitable
- (d) None of the above

Task 28

If the effective interest is 12% per annum and the interest is compounded quarterly, the nominal interest per annum is.

- (a) 11.78 %
- (b) 11.21%
- (c) 11.89%
- (d) 11.49%

Task 29

A machine depreciated at the rate of 20% on reducing balance. The original lot of the machine was Rs. 1,00,000 and ultimate scarp value is Rs. 30,000. The effective life of the machine in years is.

- (a) 4.5
- (b) 5.4
- (c) 4.9
- (d) 5

Task 30

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

- (a) Rs.5300
- (b) Rs.53653.57
- (c) Rs.5480
- (d) Rs.5465.23

Task 31

Rs, 5,000 is paid every year for ten years to pay off a loan , what is the loan amount the loan amount if interest rate be 14% per annum compounded annually is (Given $P(10, 0.14) = 5.21611$)

- (a) Rs.26080.55
- (b) Rs.1917.13
- (c) Rs. 52,161.1
- (d) Rs. 19,171, 3

Task 32

Assuming that the discount rate is 7% per annum , how much would you pay to receive Rs.50 growing at 5% annually forever ?

- (a) 2,600
- (b) 2,000
- (c) 2,500
- (d) 3,000

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Task 33

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

Task 34

A man deposited Rs. 8,000 in a bank for 3 years at 5% per annum compound interest, after 3 years he will get

- (a) Rs. 9,000
- (b) Rs. 8,800
- (c) Rs. 9,200
- (d) Rs. 9261

Task 35

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

- (a) Rs. 240
- (b) Rs. 200
- (c) Rs. 220
- (d) Rs. 210

Task 36

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

- (a) Rs. 30,000
- (b) Rs. 35,000
- (c) Rs. 40,000
- (d) Rs. 45,000

Task 37

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 (approximately)

(d) none of these

Task 38

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

- (a) Rs. 5365.35
- (b) Rs. 5000
- (c) Rs. 5325.65
- (d) Rs.6000.35

Task 39

Rs. 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 that $(1.005)^{10} = 1.0511$]

- (a) Rs. 2045
- (b) Rs.5055
- (c) Rs.2044
- (d) Rs.2065

Task 40

Suppose your father decides to gift you Rs. 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) Rs.41, 698.70
- (b) Rs.45, 698.70
- (c) Rs.41, 698.70
- (d) Rs.41, 698.70

Task 41

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

Task 42

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

Task 43

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

Task 44

Y bought Motor Bike Costing 80,000 by making down payment of Rs. 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) Rs. 17160.25
- (b) Rs. 17600.25
- (c) Rs.15600.25
- (d) Rs. 16600.25

Task 45

A sum of money doubles itself at compounded interest in 10 years in how many years will it becomes eight times?

- (a) 20
- (b) 30
- (c) 40
- (d) 35

Task 46

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

- (a) Rs.49490
- (b) Rs. 59049
- (c) Rs.61029
- (d) Rs.51049

Task 47

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

- (a) Rs. 21100
- (b) Rs. 12100
- (c) Rs. 12110
- (d) None of these

Task 48

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) 36 years
- (d) 25 years

Task 49

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%
- (d) 11.49 %

Task 50

A machine can be purchased for Rs. 50, 000. Machine will be contributing Rs. 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

Task 51

X bought a TV costing 25,000 making down payment of Rs. 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) Rs.6864.10
- (b) Rs.6850.63
- (c) Rs.6859
- (d) Rs.6871

Task 52

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

- (a) Rs.5300
- (b) Rs.53653.57
- (c) Rs.5480
- (d) Rs.5465.23

Task 53

Rs.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) Rs.26080.55
- (b) Rs.26580.55
- (c) Rs.26280.55
- (d) Rs.27080.55

Task 54

Suppose your friend decided gift to you Rs. 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

Task 55

Rs.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) Rs.10220
- (b) Rs.1022
- (c) Rs.20000
- (d) Rs.1020

Task 56

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

- (a) Rs. 3000
- (b) Rs.3700

(c) Rs.12000

(d) Rs.10000

Task 57

Simple interest on Rs.3500 for 3 years at 12% per annum is

(a) Rs.1200

(b) Rs.1260

(c) Rs.2260

(d) Rs. 2000

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Task 58

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

- (a) Rs. 121
- (b) Rs. 1210
- (c) Rs. 2110
- (d) None of these

Task 59

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

- (a) Rs.4214.78
- (b) Rs. 4124.78
- (c) Rs.4324.48
- (d) Rs.4526.48

Task 60

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

- (a) 6%
- (b) 5%
- (c) 10%
- (d) None of these

Task 61

A company is considering proposal of purchasing a machine either by making full payment of Rs.4000 or by leasing it for four years at an annual rate of Rs.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

Task 62

Anil bought a motor cycle costing Rs.1,30,000 by making a down payment of Rs.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) Rs.28379.70

- (b) Rs.26300.70
- (c) Rs.26500.70
- (d) Rs.26379.70

Task 63

Shoba borrows Rs.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) Rs.687298.4
- (b) Rs.685298.4
- (c) Rs.585298.4
- (d) Rs.587298.4

Task 64

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

- (a) Rs.5000
- (b) Rs.6000
- (c) Rs.7000
- (d) Rs. 8000

Task 65

An overdraft of Rs. 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) Rs .550.50
- (b) Rs .549.30
- (c) Rs .559.50
- (d) Rs .560.50

Task 66

At six months' intervals A deposited of Rs. 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 presented to the son on his 10th birthday. How much did he receive? $(1.06)^{16} = 2.1829$

- (a) Rs.25740
- (b) Rs.23740
- (c) Rs.25860

(d) Rs.25760

Task 67

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 %

Task 68

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

Task 69

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

- (a) 7%
- (b) 6%
- (c) 5%
- (d) 4%

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Task 70

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

- (a) 5%
- (b) 6%
- (c) 4%
- (d) 8%

Task 71

$A = \text{Rs. } 5,200$, $R = 5\%$ p.a., $T = 6$ years, P will be

- (a) Rs. 2,000
- (b) Rs. 3,880
- (c) Rs. 3,000
- (d) none of these

Task 72

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.

Task 73

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

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

Task 74

A person bought a house paying Rs. 20,000 cash down and Rs. 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) Rs. 75,000
- (b) Rs. 76,000

- (c) Rs. 76,375.80
- (d) none of these.

Task 75

A man purchased a house valued at Rs. 3,00,000. He paid Rs. 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) Rs. 8,718.45
- (b) Rs. 8,769.21
- (c) Rs. 7,893.13
- (d) none of these

Task 76

A person desires to create a fund to be invested at 10% CI per annum to provide for a prize of Rs. 300 every year. Using $V = a/I$ find V and V will be

- (a) Rs. 2,000
- (b) Rs. 2,500
- (c) Rs. 3,000
- (d) none of these.

Task 77

A person invests Rs. 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) Rs. 11,761.36
- (b) Rs. 10,000
- (c) Rs. 12,000
- (d) none of these

Task 78

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 Rs. 23,240 and Rs. 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

Task 79

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

- (a) Rs.2,200
- (b) Rs.2,287
- (c) Rs. 2,285
- (d) Rs.2290.84

Task 80

The present value of Rs. 10,000 due in 2 years at 5% p.a. compound interest when the interest is paid on half-yearly basis is

- (a) Rs. 9,070
- (b) Rs. 9,069
- (c) Rs. 9,060
- (d) None

Task 81

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

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Task 82

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%

Task 83

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

Task 84

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 %

Task 85

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

Task 86

Find the present value of ₹ 10,000 to be required after 5 years, if the interest rate be 9 per cent compounded annually (Given: $(1.09)^{-5} = 0.65$)

- (a) ₹ 5500
- (b) ₹ 5600
- (c) ₹ 6000
- (d) ₹ 6500

Task 87

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

Task 88

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

Task 89

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 instalments [Given: $(1.1)^3 = 1.331$]

- (a) ₹ 359
- (b) ₹ 820
- (c) ₹ 724
- (d) ₹ 720.

Task 90

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 %

Task 91

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

Task 92

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

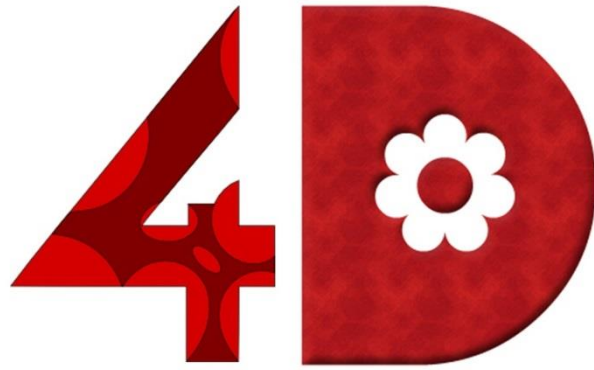
Task 93

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

- (a) 1.25 years
- (b) 25 Years
- (c) 0.25 Years
- (d) none

Solutions

Task	Solution	Task	Solution	Task	Solution	Task	Solution
1	A	33	B	65	B		
2	A	34	D	66	B		
3	A	35	D	67	B		
4	A	36	A	68	B		
5	B	37	C	69	D		
6	A	38	A	70	C		
7	B	39	C	71	B		
8	B	40	A	72	A		
9	A	41	B	73	A		
10	C	42	D	74	C		
11	B	43	A	75	A		
12	A	44	A	76	C		
13	B	45	B	77	A		
14	B	46	B	78	C		
15	C	47	B	79	D		
16	A	48	C	80	C		
17	C	49	D	81	C		
18	C	50	B	82	C		
19	A	51	A	83	C		
20	B	52	B	84	B		
21	A	53	B	85	A		
22	C	54	D	86	D		
23	B	55	A	87	B		
24	D	56	D	88	A		
25	A	57	B	89	A		
26	A	58	B	90	D		
27	A	59	A	91	B		
28	D	60	B	92	A		
29	B	61	B	93	A		
30	B	62	D				
31	A	63	D				
32	C	64	A				



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Paper 3: BMLRS

Chapter 5

Permutations and

Combinations

Name: _____

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Task 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

Task 2

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 the above

Task 3

${}^{15}C_{3r} = {}^{15}C_{r+3}$, then r is equal to

- (a) 2
- (b) 3
- (c) 4
- (d) 5

Task 4

A polygon has 44 diagonals then the number of sides are

- (a) 6
- (b) 7
- (c) 8
- (d) 9

Task 5

Number ways of painting of a face of a cube by 6 colours is

- (a) 36
- (b) 6
- (c) 24
- (d) 20

Task 6

How many Six-digit telephone numbers can be formed by using 10 distinct digits

- (a) 10^8
- (b) 6^{10}
- (c) $10C_9$
- (d) $10P_6$

Task 7

$$nC_1+nC_2+nC_3+\dots\dots\dots=$$

- (a) 2^{n-1}
- (b) 2^n
- (c) 2^{n+1}
- (d) none of these

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Task 8

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

Task 9

There are 12 points in a plane which are collinear no three points is a straight line, number of triangular that can be formed with the vertices as these points are:

- (a) 216
- (b) 220
- (c) 110
- (d) 108

Task 10

In a lawn different ways can four persons stand in a line for a group photograph.

- (a) 24
- (b) 16
- (c) 8
- (d) 64

Task 11

A Company wishes to simultaneously promote three of its 8 department assistant managers. In how many ways these promotions can take place?

- (a) 336
- (b) 56
- (c) 8
- (d) 1680

Task 12

In how many ways can the letters of the word "ACCOUNTANT" be arranged if vowels always occur together?

- (a) 7560
- (b) 7650
- (c) 7660
- (d) 7550

Task 13

From a committee of 8 persons, in how many ways can we choose a chairman and a vice chairman assuming one person cannot hold more than one position?

- (a) 50
- (b) 56
- (c) 62
- (d) none of these

Task 14

${}^{n+2}C_n = 45$ find the value of n

- (a) 7
- (b) 8
- (c) 9
- (d) 6

Task 15

Four letters are written and 4 envelopes are addressed. The number of ways in which all the 4 letters do not go into correct envelopes is

- (a) 511
- (b) 1023
- (c) 23
- (d) 15

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Task 16

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

Task 17

In how many ways the letters of the word 'ARRANGE' be arranged?

- (a) 1,200
- (b) 1,250
- (c) 1,260
- (d) 1,300

Task 18

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) $7!$

Task 19

${}^n P_r = 720$ and ${}^n C_r = 120$ then value of r is

- (a) 4
- (b) 5
- (c) 3
- (d) 6

Task 20

if ${}^n P_4 = 12{}^n P_2$ then $n =$

- (a) 2
- (b) 3
- (c) 4

Task 21

A man has 5 friends'. In how many ways can he invite one or more of his friends to dinner?

- (a) 30
- (b) 31
- (c) 32
- (d) 10

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Task 22

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

Task 23

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

Task 24

A box contains 7 red, 6 white and 4 blue balls. How many selections of three balls one of each colour?

- (a) 178
- (b) 158
- (c) 198
- (d) 168

Task 25

The number of diagonals in a polygon of 6 sides

- (a) 9
- (b) 8
- (c) 6
- (d) 12

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Task 26

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

Task 27

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

Task 28

An examination paper with 10 questions consists of 6 questions in Algebra and 4 questions 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

Task 29

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

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Task 30

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

Task 31

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

Task 32

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 of these

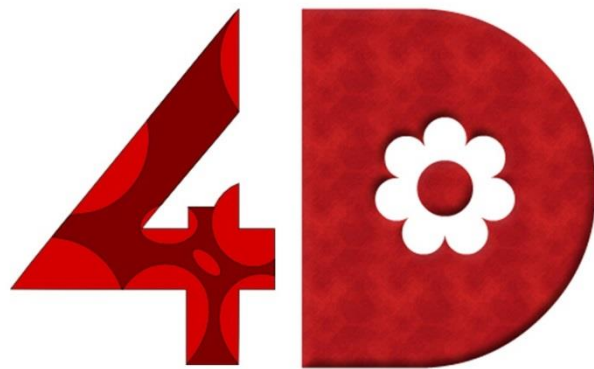
Task 33

In an election the number of candidates is one more than the number of members to be elected. If a voter can vote in 254 different ways; find the number of candidates.

- (a) 8
- (b) 10
- (c) 7
- (d) None of these

Solutions

Task	Solution	Task	Solution	Task	Solution	Task	Solution
1	C	33	A				
2	C						
3	B						
4	D						
5	B						
6	D						
7	A						
8	D						
9	A						
10	A						
11	B						
12	A						
13	B						
14	B						
15	C						
16	B						
17	C						
18	A						
19	C						
20	D						
21	B						
22	D						
23	A						
24	D						
25	A						
26	B						
27	A						
28	A						
29	B						
30	A						
31	A						
32	C						



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Paper 3: BMLRS

Chapter 6

Sequence and Series

Name: _____

Contact No: _____

Email Id: _____

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Task 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

Task 2

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 of these

Task 3

For what value of x; the sequence x+1, 3x, 4x+2 are in AP?

- (a) 3
- (b) 2
- (c) 4
- (d) 5

Task 4

If $a^{1/x} = b^{1/y} = c^{1/z}$ and a,b,c are in GP then x, y, z are in

- (a) AP
- (b) GP
- (c) HP
- (d) AGP

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Task 5

The n^{th} element of the series 1,3,5,7, is

- (a) n
- (b) $2n-1$
- (c) $2n+1$
- (d) none of these

Task 6

If $\frac{1+3+5+\dots+n \text{ terms}}{2+4+6+\dots+50 \text{ terms}} = \frac{2}{51}$, then the value of 'n'

- (a) 9
- (b) 10
- (c) 12
- (d) 13

Task 7

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

Task 8

The two arithmetic means between 4 and 13 are

- (a) 7,10
- (b) 3,14
- (c) 5,12
- (d) 6,11

Task 9

The Sum of First n terms of an A.P is $5n^2+7n$. The 10th term is

- (a) 101
- (b) 96
- (c) 84
- (d) 102

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Task 10

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

Task 11

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

Task 12

The n^{th} 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

Task 13

The sum of the first two terms of a GP is $\frac{5}{3}$ and the sum of infinity of the series is 3. The common ratio is

- (a) $\frac{1}{3}$
- (b) $\frac{2}{3}$
- (c) $-\frac{1}{3}$
- (d) none of these

Task 14

The sum of the infinite series $1 + \frac{2}{3} + \frac{4}{9} + \dots$ is

- (a) $\frac{1}{3}$
- (b) 3
- (c) $\frac{2}{3}$
- (d) none of these

Task 15

Which term of the AP 64,60,56,52....is Zero

- (a) 16
- (b) 17
- (c) 15
- (d) 14

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Task 16

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

Task 17

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

Task 18

if three AM's between 3 and 11, they are

- (a) 4, 6, 8
- (b) 3, 5, 7
- (c) 5, 7, 9
- (d) $11/2, 15/2, 19/2$

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Task 19

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.

Task 20

The sum of three numbers in G.P. is 70. If the two extremes are 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

Task 21

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

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Task 22

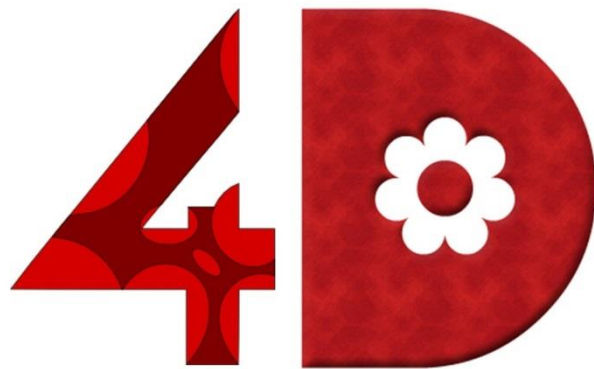
If a, b, c are in AP and x, y, z are in GP, then the value of $x^{(b-c)} \cdot y^{(c-a)} \cdot z^{(a-b)}$ is

- (a) 1
- (b) 0
- (c) $b(c-a)$
- (d) none

Task 23

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 of these



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Paper 3: BMLRS

Chapter 7

Sets, Relations and Functions

Name: _____

Contact No: _____

Email Id: _____

May 2018

Task 1

Find $f \circ g$ 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) $(2x^2+1)^8$

Task 2

The number of proper subsets of the set $\{3, 4, 5, 6, 7\}$ is

- (a) 32
- (b) 31
- (c) 30
- (d) 25

Task 3

On the sets of lines in a plane the Relation "is perpendicular to" is

- (a) Reflexive
- (b) Symmetric
- (c) Transitive
- (d) none of these

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Task 4

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) $\{1, 2, 3, 4\}$

Task 5

The number of subsets $\{1, 2, 5\}$ is

- (a) 3
- (b) 8
- (c) 6
- (d) 9

Task 6

On the set of lines, being Perpendicular is a _____ relation.

- (a) Reflexive
- (b) Symmetric
- (c) Transitive
- (d) None of these

Task 7

The domain of $\{(1,7), (2,6)\}$ is

- (a) $(1,6)$
- (b) $(7,6)$
- (c) $(1,2)$
- (d) $\{6,7\}$

Task 8

$A \cap A$ is equal to

- (a) A
- (b) ϕ
- (c) Universal Set
- (d) none of these

Task 9

If $f(x) = x+3$, $g(x) = x^2$, then $f \circ g(x)$

- (a) x^2+3
- (b) x^2+x+3
- (c) $(x+3)^2$
- (d) none of these

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Task 10

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

Task 11

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

Task 12

If $f(x) = x+3$ and $g(x) = x^2$, then $f \circ g(x)$

- (a) x^2+3
- (b) x^2+x+3
- (c) $(x+3)^2$
- (d) none of these

Task 13

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

Task 14

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

Task 15

Find the $f \circ g$ for the functions $f(x) = x^3$, $g(x) = x + 1$

- (a) $x^2(x+1)$
- (b) x^2
- (c) $x+1$
- (d) $(x+1)^3$

Task 16

The number of sub sets of function $\{2, 3, 5, 6\}$

- (a) 3
- (b) 8
- (c) 16
- (d) none of these

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Task 17

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

Task 18

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

Task 19

If $f(x) = \left(\frac{x^2 - 4}{x - 2} \right)$, then $f(2)$ is

- (a) 0
- (b) 2
- (c) 4
- (d) 1

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Task 20

$(A \cup B)'$ is equal to

- (a) $(A' \cup B)'$
- (b) $A' \cap B'$
- (c) $A' \cup B'$
- (d) none of these

Task 21

If $f(x) = \frac{x}{1-x}$ and $g(x) = \frac{x-1}{x}$, then $g \circ f(x)$ is

- (a) $x-1$
- (b) x
- (c) $1/x$
- (d) none of these

Task 22

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

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Task 23

Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be such that $f(x) = 2^x$, then $f(x+y)$ equals

- (a) $f(x) + f(y)$
- (b) $f(x) \cdot f(y)$
- (c) $f(x) \div f(y)$
- (d) none of these

Task 24

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) $\{p, r\}$

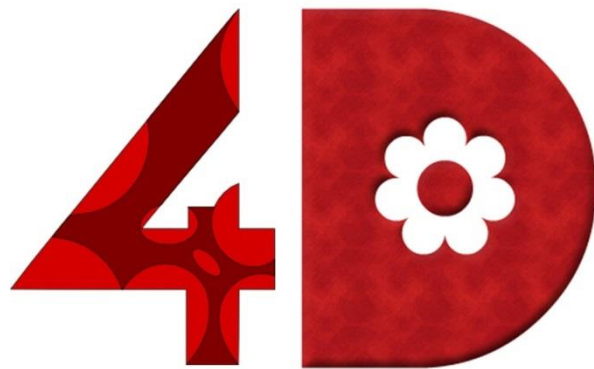
Task 25

The set having no element is called

- (a) Singleton set
- (b) null set
- (c) finite set
- (d) Infinite set

Solutions

Task	Solution	Task	Solution	Task	Solution	Task	Solution
1	D						
2	B						
3	B						
4	A						
5	B						
6	B						
7	C						
8	A						
9	A						
10	B						
11	D						
12	A						
13	B						
14	C						
15	D						
16	C						
17	A						
18	C						
19	C						
20	B						
21	B						
22	B						
23	B						
24	A						
25	B						
26							
27							
28							
29							
30							
31							
32							



CA – Foundation

Paper 3: BMLRS

Chapter 8

Differential Calculus

Name: _____

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Task 1

The derivative of $e^x \log x$

(a) $\frac{e^x}{x}(1+x \log x)$

(b) $\frac{e^x}{x}(1+\log x)$

(c) $(1+\log x)$

Task 2

If $y = \sqrt{\frac{1-x}{1+x}}$ then $(1-x^2) \frac{dy}{dx} =$

(a) y

(b) $-x$

(c) $-y$

(d) 0

Task 3

Find the gradient of the curve $y = 3x^2 - 5x + 4$ at the point $(1, 2)$

(a) 1

(b) -1

(c) 0

(d) 2

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Task 4

If $MC = 10 - 0.01x + 0.009x^2$ where x is quantity of production and the total fixed cost = Rs.100, then the total cost is

- (a) $100 + 10x - 0.05x^2 + 0.0009x^3$
- (b) $100 + 10x - 0.005x^2 + 0.0003x^3$
- (c) $100 + 10x - 0.05x^2 + 0.0009x^3$
- (d) $100 - 10x - 0.05x^2 + 0.0009x^3$

Task 5

if $e^{xy+xy} = e$ then $\frac{dy}{dx} =$

- (a) $-\frac{y}{x}$
- (b) $-\frac{1}{xy}$
- (c) xy
- (d) $\frac{x}{y}$

Task 6

if $x = at^3$; $y = 3bt^2$; then $\frac{dy}{dx} =$

- (a) $\frac{3x}{2y}$
- (b) $\frac{2y}{3x}$
- (c) $\frac{3y}{2x}$
- (d) $\frac{2x}{3y}$

Task 7

If $x = at^2$ and $y = 2at$ then $\frac{dy}{dx}$ at $t = 1$

- (a) 2

- (b) 1
- (c) $\frac{1}{2}$
- (d) $\frac{1}{2a}$

Task 8

The marginal cost function for production is $10+24x-3x^2$. If the total cost of producing one unit is Rs. 25 find the total cost function.

- (a) $4+10x+12x^2-x^3$
- (b) $4+10x-12x^2+x^3$
- (c) $4+10x-12x^2-x^3$
- (d) $4-10x-12x^2-x^3$

Task 9

If $y = e^x - e^{-x}$ then $\frac{dy}{dx} - \sqrt{y^2 + 4}$ is equal to

- (a) 1
- (b) 0
- (c) -1
- (d) none of these

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Task 10

Given $x = 2t + 5$, $y = t^2 - 2$; $\frac{dy}{dx}$ is calculated

- (a) t
- (b) $-1/t$
- (c) $1/t$
- (d) none of these

Task 11

The slope of the tangent to the curve $y = x^2 - x$ at the point, where the line $y = 2$ cuts the curve in the first quadrant, is

- (a) 2
- (b) 3
- (c) -3
- (d) 2

Task 12

For the curve $x^2 + y^2 + 2gx + 2hy = 0$, the value of $\frac{dy}{dx}$ at $(0,0)$ is

- (a) $-g/h$
- (b) g/h
- (c) h/g
- (d) $-h/g$

Task 13

if $x = at^2$, $y = 2at$ then $\left. \frac{dy}{dx} \right|_{t=2}$ is equal to

- (a) $1/2$
- (b) -2
- (c) $-1/2$
- (d) none of these

Task 14

The gradient of the curve $y = 4x^2 - 2x$ at $x = 1$ is

- (a) 4
- (b) 6
- (c) 8
- (d) None of these

Task 15

If $x = at^3$, $y = \frac{a}{t^3}$, $\frac{dy}{dx}$ at $t = 1$ is

- (a) 1
- (b) -1
- (c) 3
- (d) $\frac{2}{3}$

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Task 16

If $y^3 \cdot x^5 = (x+y)^8$, then $\frac{dy}{dx}$ is

- (a) $\frac{y}{x}$
- (b) $\frac{-y}{x}$
- (c) $\frac{y^5}{x^3}$
- (d) None of these

Task 17

If $f'(x) = 3x^2 + 2$ & $f(0) = 0$ then find $f(2)$.

- (a) 8
- (b) 10
- (c) 12
- (d) None of these

Task 18

The gradient of the curve $x^3 + y^3 = 9$ at the point (1,2) is

- (a) $-\frac{1}{4}$
- (b) $\frac{1}{4}$
- (c) 4
- (d) -4

Task 19

If $x = \frac{2t}{1+t^2}$, $y = \frac{1-t^2}{1+t^2}$ then $\frac{dy}{dx} + \frac{x}{y}$ is

- (a) 1
- (b) 2
- (c) 0
- (d) $4t^2$

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Task 20

The gradient of the curve $y = 2x^3 - 5x^2 - 3x$ at $x = 0$ is

- (a) 3
- (b) -3
- (c) $\frac{1}{3}$
- (d) none of these

Task 21

If $f(x) = x^2 - 6x + 8$ then $f(5) - f(8)$ is equal to

- (a) $f(2)$
- (b) $3 \cdot f(2)$
- (c) $2 \cdot f(2)$
- (d) none of these.

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Task 22

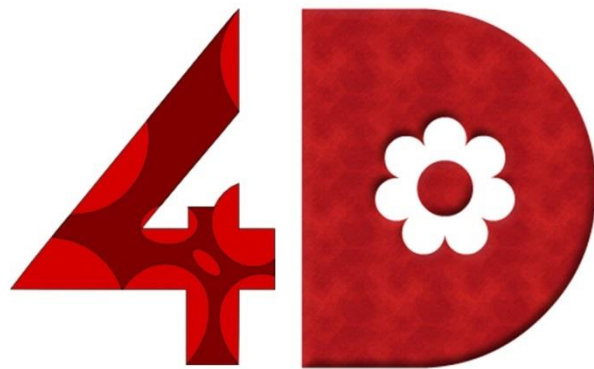
If $x\sqrt{1+y} + y\sqrt{1+x} = 0$, then $(1+x)^2 \frac{dy}{dx} =$

- (a) 0
- (b) 1
- (c) -1
- (d) 2

Task 23

Find $\frac{dy}{dx}$ at $t = 1$ when $x = t \log t$ and $y = \frac{(\log t)}{t}$

- (a) 1
- (b) -1
- (c) -1/2
- (d) 0



CA – Foundation

Paper 3: BMLRS

Chapter 8

Unit 2: Integration

Name: _____

Contact No: _____

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May 2018

Task 1

The equation of the curve in the form $y = f(x)$ if the curve passes through the point $(1, 0)$ and $f'(x) = 2x - 1$ is

- (a) $y = x^2 - x$
- (b) $x = y^2 - y$
- (c) $y = x^2$
- (d) none of these

Task 2

$$\int \frac{1}{x \log x} dx = ?$$

- (a) $\log|x| + c$
- (b) $\log|\log x| + c$
- (c) $(\log x)^2 + c$
- (d) none of these

Task 3

$$\int_1^2 \frac{2x}{1+x^2} dx \text{ is equal to}$$

- (a) $\log_e(5/2)$
- (b) $\log_e 5 - \log_e 2 + k$
- (c) $\log_e(2/5)$
- (d) none of these

Task 4

$$\int \frac{1}{(e^x - 1)^2} dx =$$

- (a) $\log \left| \frac{e^x}{e^x - 1} \right| + \frac{1}{e^x - 1} + c$
- (b) $\log \left| \frac{e^x - 1}{e^x} \right| + \frac{1}{e^x - 1} + c$
- (c) $\log \left| \frac{e^x}{e^x - 1} \right| - \frac{1}{e^x - 1} + c$

(d) $\log\left[\frac{e^x}{e^x-1}\right] - \frac{1}{e^x+1} + c$

Task 5

$$\int_0^{2a} \frac{f(x)}{f(x) + f(2a-x)} dx$$

- (a) a
- (b) -a
- (c) 0
- (d) 2a

Task 6

$$\int \frac{1}{x \log x} dx = ?$$

- (a) $\log|x| + c$
- (b) $\log |\log x| + c$
- (c) $(\log x)^2 + c$
- (d) none of these

Task 7

$$\int_0^2 \frac{\sqrt{x}}{\sqrt{x} + \sqrt{2-x}} dx \text{ is equal to}$$

- (a) -1
- (b) 0
- (c) 2
- (d) 1

Task 8

Evaluate: $\int \frac{1}{x(x+1)} dx$

- (a) $x + \log(x+1) + c$
- (b) $x - \log(x+1) + c$
- (c) $\log x - \log(x+1) + c$
- (d) none of these

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Task 9

$$\int e^{-3x} dx =$$

(a) $-\frac{1}{3}e^{-3x} + c$

(b) $\frac{1}{3}e^{-3x} + c$

(c) $-\frac{1}{3}e^{3x} + c$

(d) $-3e^{-3x} + c$

Task 10

$$\int x \cdot \log x dx$$

(a) $\frac{x^2}{2} \cdot \log x - \frac{x^2}{4} + c$

(b) $-\frac{x^2}{2} \cdot \log x - \frac{x^2}{4} + c$

(c) $\frac{x^2}{2} \cdot \log x + \frac{x^2}{4} + c$

(d) $-\frac{x^2}{2} \cdot \log x + \frac{x^2}{4} + c$

Task 11

$$\int \frac{1}{a^2 - x^2} dx$$

(a) $\frac{1}{2a} \log \left| \frac{a+x}{a-x} \right| + c$

(b) $\frac{-1}{2a} \log \left| \frac{a-x}{a+x} \right| + c$

(c) $\frac{1}{2a} \log \left| \frac{x-a}{x+a} \right| + c$

(d) None of these

Task 12

$$\int \left\{ \frac{1}{\log x} - \frac{1}{(\log x)^2} \right\} dx$$

- (a) $\frac{1}{\log x} + c$
- (b) $\frac{x}{\log x} + c$
- (c) $-\frac{x}{\log x} + c$
- (d) None of these

Task 13

$$\int x^2 e^x dx$$

- (a) $e^x(x^2-2x+2) + c$
- (b) $e^x(x^2-2) + c$
- (c) $e^x(x^2+2x+2) + c$
- (d) $e^x(x^2-2x) + c$

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Task 14

Evaluate $\int \frac{2x+1}{x(x+1)} dx$

- (a) $\log(x^2 - x) + c$
- (b) $\log(x^2 + x) + c$
- (c) $\log(x^2 + 1) + c$
- (d) None of these

Task 15

Evaluate $\int_0^1 x.e^x dx$

- (a) e
- (b) $e-1$
- (c) $2e$
- (d) 1

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Task 16

$$\int e^{ax} dx$$

- (a) $e^x + c$
- (b) $\frac{e^{ax}}{a} + c$
- (c) $\log x + c$
- (d) $e^{ax} + c$

Task 17

Evaluate $\int_1^4 (2x + 5) dx$ and the value is

- (a) 3
- (b) 10
- (c) 30
- (d) None of these.

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Task 18

If $f'(x) = 3x^2 + 2$ and $f(0) = 0$, find $f(2)$

- (a) 5
- (b) 8
- (c) 10
- (d) 12

