



CA FOUNDATION MATHEMATICS

1st Session



Question 1

If $A : B = 3 : 5$, $B : C = 5 : 4$, $C : D = 2 : 3$, and D is 50% more than E , find the ratio between A and E .

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

Question 2

If $\frac{8^n \times 2^3 \times 16^{-1}}{2^n \times 4^2} = \frac{1}{4}$, then the value of n

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

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Question 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) $\frac{1}{x+y+z}$

Question 4

The salaries of A , B and C are in the ratio $2 : 3 : 5$. If increments of 15%, 10% and 20% are allowed respectively to their salary, then what will be the new ratio of their salaries?

- (a) $23 : 33 : 60$ (b) $33 : 23 : 60$ (c) $23 : 60 : 33$ (d) $33 : 60 : 23$



Question 5

If $\log_a(ab) = x$, then $\log_b(ab) = ?$

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

Question 6

If $\log_4 x + \log_{16} x + \log_{64} x + \log_{256} x = \frac{25}{6}$, then the value of x is:

- (a) 64 (b) 4 (c) 16 (d) 2

Question 7

If $x^2 + y^2 = 7xy$, then $\log \frac{1}{3}(x+y) = ?$

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

Question 8

The value of $\frac{2^n + 2^{n-1}}{2^{n+1} - 2^n}$ is:

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

Question 9

If $3^x = 5^y = 75^z$, then:

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

Question 10

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

Question 11

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

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

Question 12

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

Question 13

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

- (a) a^{x+y+z} (b) $a^{\sqrt{x+y+z}}$ (c) $a^{\sqrt[3]{x+y+z}}$ (d) $(a^{x+y+z})^{1/4}$

Question 14

One student is asked to divide a half of a number by 6 and other half by 4 and then to add the two quantities. Instead of doing so, the student divides the given number by 5. If the answer is 4 short of the correct answer, then the number was:

- (a) 320 (b) 400 (c) 480 (d) None



Question 15

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 ₹8728. What will the bill be for 500 km?

- (a) ₹8876 (b) ₹9156 (c) ₹9472 (d) ₹9000

Question 16

The value of k for the system of equations $kx + 2y = 5$ and $3x + y = 1$ has no solution is:

- (a) 5 (b) $\frac{2}{3}$ (c) 6 (d) $\frac{3}{2}$

Question 17

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

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

Question 18

If α, β are the two roots of the equation $x^2 + px + q = 0$, form the equation whose roots are $\frac{\alpha}{\beta}$ and $\frac{\beta}{\alpha}$.

- (a) $qx^2 - (p^2 - 2q)x + q = 0$ (b) $px^2 - (p^2 - 2q)x + q = 0$
(c) $qx^2 - (p^2 - 2q)x + p = 0$ (d) $qx^2 + (p^2 - 2q)x + p = 0$

Question 19

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

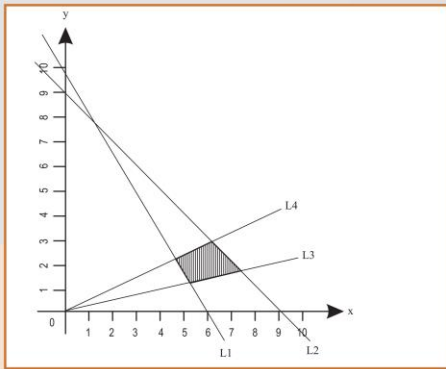
Question 20

The common region in the graph of the inequalities $x + y \leq 4$, $x - y \leq 4$, $x \geq 2$ is

- (a) Equilateral triangle
- (b) Isosceles triangle
- (c) Quadrilateral
- (d) Square

Question 21

(viii)



L1 : $5x + 3y = 30$ L2 : $x + y = 9$ L3 : $y = x/3$ L4 : $y = x/2$

The common region (shaded part) shown in the diagram refers to

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|-----------------------|-----------------------|-----------------------|----------------------|-------------------|
| (a) $5x + 3y \leq 30$ | (b) $5x + 3y \geq 30$ | (c) $5x + 3y \geq 30$ | (d) $5x + 3y > 30$ | (e) None of these |
| $x + y \leq 9$ | $x + y \leq 9$ | $x + y \geq 9$ | $x + y < 9$ | |
| $y \leq 1/5 x$ | $y \geq x/3$ | $y \leq x/3$ | $y \geq 9$ | |
| $y \leq x/2$ | $y \leq x/2$ | $y \geq x/2$ | $y \leq x/2$ | |
| | $x \geq 0, y \geq 0$ | $x \geq 0, y \geq 0$ | $x \geq 0, y \geq 0$ | |

Question 22

If p, q and r , are in A.P. and x, y, z are in G.P., then $x^{q-r} \cdot y^{r-p} \cdot z^{p-q}$ is equal to:

- (a) 0
- (b) -1
- (c) 1
- (d) None