## SECTION – A [16 Marks] (16Q × 1M)

**1.** Mr. Puneet Chopra purchased LED T.V. for the taxable value of ₹ 92000. He sold it for ₹ 98000, the rate of GST is 12%. Find the input tax credit of Mr. Puneet Chopra. What is the amount of GST payable.

(a) ₹ 720 (b) ₹ 820

(c) ₹ 920 (d) ₹ 1020

**2.** Kalpana Chaudhary has a recurring deposit account with a nationalised bank for a period of 2 year. If the bank pay interest at the rate of 6% per annum and the monthly installment is ₹ 1000. Find the interest earned in 2 year.

(a) 1000 (b) 1200

(c) 1400 (d) 1500

**3.** Solve the inequation $|3x - 2| \leq \frac{1}{2}$

(a) $\frac{1}{4} \leq x \leq \frac{-1}{4}$ (b) $\frac{1}{4} \leq x \leq \frac{2}{-3}$

(c) $\frac{1}{2} \leq x \leq \frac{5}{6}$ (d) None of these

**4.** From the inequation find the minimum value of $x - 1 \leq 5$ $x \in N$

(a) 1 (b) 2

(c) 3 (d) 4

**5.** Determine the nature of root

$$x^2 - 7x + 12 = 0$$

(a) real root

(b) imanginary

(c) real and unequal

(d) real and equal

**6.** Find the fourth proportion of the following

$$6x^2y : 5x^2y :: 30 : t$$

(a) 10 (b) 15

(c) 20 (d) 25

**7.** $\sqrt{\frac{x}{x+16}} = \frac{25}{12} - \sqrt{\frac{x+16}{x}}$ : $x \neq -16$

Find the value of $x$

(a) $\frac{4}{3}$ (b) $\frac{5}{3}$

(c) $\frac{7}{3}$ (d) $\frac{9}{5}$

**8.** Find the value of $\frac{m^2+n^2}{m^2-n^2}$, when $\frac{7m+2n}{7m-2n} = \frac{5}{3}$

(a) 113/15 (b) 117/17

(c) 119/11 (d) None of these

**9.** Find the value of $k$ if $x - 1 = 0$ is a factor of $x^3 + 2x^2 - kx + 10$

(a) 12 (b) 13

(c) 14 (d) 15

**10.** If $f(x) = 2x^2 + kx - 6$ leaves a remainder $-3$ when divided by $(x + 3)$. Find the value $k$.

(a) 5 (b) 4

(c) 3 (d) 2

**11.** Find the value of $A^3$ when $A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$

(a) $\begin{bmatrix} 54 & 81 \\ 118 & 37 \end{bmatrix}$ (b) $\begin{bmatrix} 31 & 22 \\ 64 & 82 \end{bmatrix}$

(c) $\begin{bmatrix} 110 & 112 \\ 38 & 74 \end{bmatrix}$ (d) $\begin{bmatrix} 37 & 81 \\ 54 & 118 \end{bmatrix}$

**12.** If $A = \begin{bmatrix} 1 & -1 \\ 2 & -2 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 7 \\ 8 & -7 \end{bmatrix}$. Find the value of $2A + B$

(a) $\begin{bmatrix} 6 & 5 \\ 12 & -11 \end{bmatrix}$ (b) $\begin{bmatrix} -11 & 5 \\ 12 & 6 \end{bmatrix}$

(c) $\begin{bmatrix} 6 & 5 \\ -11 & 12 \end{bmatrix}$ (d) $\begin{bmatrix} 6 & 15 \\ -11 & 5 \end{bmatrix}$

**13.** In the following A.P.

2, □, 26. Find the missing term

(a) 14 (b) 16

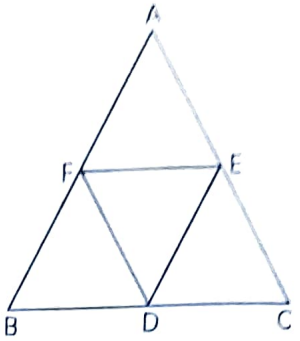
(c) 18 (d) 20

**14.** Find the $9^{th}$ term of the A.P. 2, 7, 12,

(a) 36 (b) 38

(c) 40 (d) 42

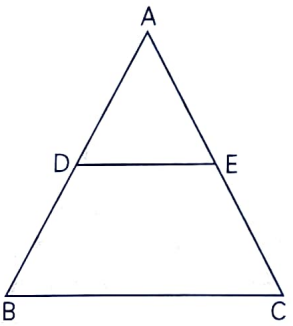
**15.** $D$, $E$, $F$ are the midpoint of the side $BC$, $CA$ and $AB$ respectively of the $\triangle ABC$. Determine the ratio of the area of the $\triangle DEF$ and $\triangle ABC$.




(a) 1 : 4 (b) 3 : 4

(c) 5 : 7 (d) 7 : 9

**16.** From the given figure $DE \parallel BC$ and $\frac{AD}{DB} = \frac{2}{3}$, calculate




(a) 14 : 23 (b) 17 : 29

(c) 5 : 17 (d) 4 : 24

## SECTION – B [12 Marks]

(6Q × 2M)

**17.** Interest paid formula is

(a) $P \times n + I$

(b) $\frac{P \times R \times T}{100}$

(c) $P \times \frac{n(n+1)}{2+12} \times \frac{r}{100}$

(d) None of these

**18.** 10% GST means

(a) 5% goes to centre

(b) 5% goes to state

(c) Both (a) and (b)

(d) None of these

**19.** If $a$ is a positive real no. then the value of $|x - a| \le r$

(a) $a - r \le x \le a + a$

(b) $x \le -a$

(c) $-a \le x \le a$

(d) $x \ge a$

**20.** Comparison ratio $a : b > c : d$ then .....

(a) $ad < bc$ (b) $ad = bc$

(c) $ad > bc$ (d) None of these

**21.** Which properties belong to the matrix

$A(BC) = (AB)C$

(a) Commutative (b) Associative

(c) Distribution (d) Cancellation

**22.** For what value of $P$ is the polynomial $g(x)$ is a factor

$f(x) = 5x^3 + Px^2 - 8x - 12$, $g(x) = x - 1$

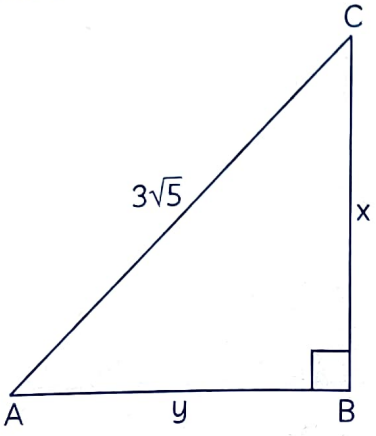
(a) 10 (b) 12

(c) 14 (d) 15

## SECTION – C [12 Marks]

(3Q × 4M)

**23.** The hypotenuese of right triangle is $3\sqrt{5}$ cm. If the smaller side is tripled and the larger side is doubled the new hypotenuese will be:




(A) Find the length side of *AB*

(a) 6 (b) 7

(c) 8 (d) 9

(B) Find the length of the side *BC*

(a) 2 (b) 3

(c) 4 (d) 5

(C) Find the area of triangle

(a) 0 (b) 9

(c) 10 (d) 11

(D) Triangle are

(a) Scalane

(b) Isosceles

(c) Equalitarial

(d) None of the abvoe

**24.** $n^{th}$ of an A.P. is 4 and common difference is 2 at the sum of *n* terms is (– 14) then

(A) First term of the A.P.

(a) – 8 (b) – 9

(c) – 10 (d) – 11

(B) Find the value of *n*

(a) 6 (b) 7

(c) 8 (d) 9

(C) Find the value of $8^{th}$ term of the A.P.

(a) 5 (b) 4

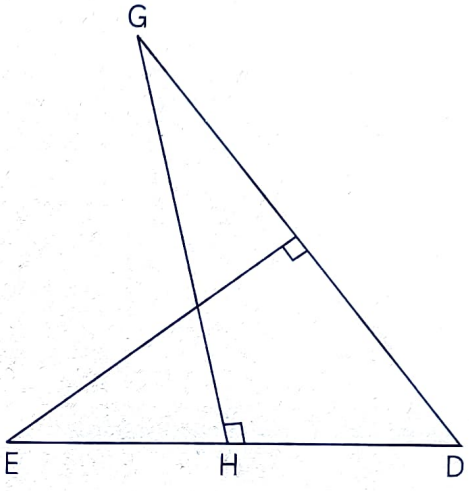
(c) 6 (d) 7

(D) Find the value of sum of first $4^{th}$ term of the A.P.

(a) – 5 (b) – 10

(c) – 15 (d) – 20

**25.** In the given figure $\angle GHE = \angle DFE = 90°$, $DH = 8$ cm, $DF = 12$ cm, $DG = (3x - 1)$ cm and $DE = (4x + 2)$ cm. Find the




(A) $\angle GHD = \angle DFE$ by the properties of

(a) AA (b) SAS

(c) SSS (d) None of these

(B) Find the length of segment *DG*

(a) 10 (b) 20

(c) 30 (d) 40

(C) Find the length of the segment *DE*

(a) 10 (b) 20

(c) 30 (d) 40

(D) Find the ratio of $\frac{DG}{DE}$

(a) 2 : 3 (b) 3 : 4

(c) 4 : 5 (d) 5 : 6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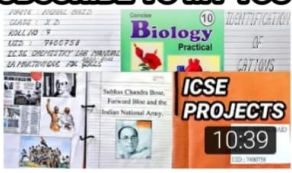


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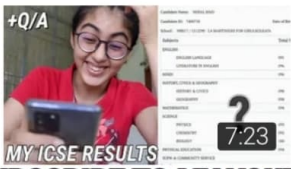


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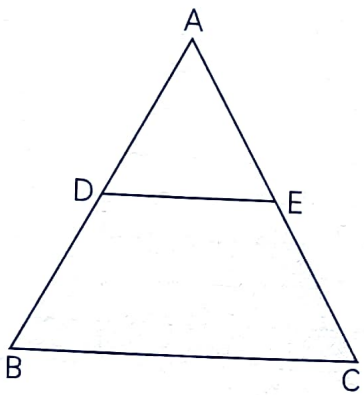
## SECTION – A [16 Marks]

(16Q × 1M)

**1.** In the given figure, $DE \parallel BC$ and $\frac{AD}{DB} = \frac{2}{3}$

Calculate: $\frac{\text{ar(trapezium } \Delta ECD)}{\text{ar}(\Delta ABC)}$




(a) 21 : 25 (b) 31 : 35

(c) 41 : 45 (d) 51 : 55

**2.** In the given figure $ABC$ is a triangle $DE$ is parallel to $BC$ and $\frac{AD}{DB} = \frac{3}{2}$, determine the ratio of $\frac{AD}{AB}$ and $\frac{DE}{BC}$

(a) 3 : 5 (b) 4 : 7

(c) 7 : 9 (d) 9 : 11

**3.** Amount deposited is equal to

(a) Monthly installment × $n$

(b) Monthly installment × $\frac{n(n+1)}{2}$

(c) $\frac{P \times R \times T}{100}$

(d) None of these

**4.** How many types of GST are available in India?

(a) One (b) Two

(c) Three (d) Four

**5.** Solve the following inequation

$4 - 2x \geq 2x - 16$, given that $x \in N$

(a) {1, 2, 3, 4}

(b) {1, 2, 3, 4, 5}

(c) {1, 2, 3 ..... ∞}

(d) None of these

**6.** What is the value of $k$ in the given quadratic equation?

$(k - 1)^2 - 2x + 1 = 0$

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

(c) $\frac{1}{3}$ (d) None of these

7. The solution set representing the followng number line is


(a) $\{x : x \in R, -3 \leq x \leq 4\}$
(b) $\{x : x \in R, -3 < x < 4\}$
(c) $\{x : x \in R, -3 \leq x < 4\}$
(d) $\{x : x \in R, -3 < x \leq 4\}$

8. If the sum and product of the root of the equation $ax^2 - 5x + c = 0$ are both equal to 10, find the value of $a$ and $c$

(a) $\frac{1}{2}, 5$ (b) $-5, \frac{1}{3}$

(c) $-5, \frac{-1}{3}$ (d) None of these

9. Find the duplicate ratio of $2\sqrt{3} : \sqrt{5}$

(a) 12/25 (b) 13/27
(c) 17/19 (d) None of these

10. Find the value of $A + A^2$ when $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

(a) $I$ (b) $2I$
(c) $3I$ (d) $4I$

11. Find the value of $A - B$, $A = \begin{bmatrix} 4 & 5 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix}$

(a) $\begin{vmatrix} 1 & 1 \\ 4 & 4 \end{vmatrix}$ (b) $\begin{vmatrix} 1 & 9 \\ 9 & 1 \end{vmatrix}$

(c) $\begin{vmatrix} 2 & 4 \\ 6 & 8 \end{vmatrix}$ (d) $\begin{vmatrix} 9 & 1 \\ 8 & 1 \end{vmatrix}$

12. Find the subtriplet ratio of $8a^3 : 125b^3$

(a) $2a/5b$ (b) $7b/3a$
(c) $5a/11b$ (d) $19a/17b$

13. Find the values of $P$, when $x - 1$ is the factor of $x^3 - P^2 + 2x = 0$

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

14. Find the factor of $x^2 - 6x + 9$

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

15. Find the sum of $6^{th}$ term of the A.P.

2, 7, 12 .....

(a) 85 (b) 86
(c) 87 (d) 88

16. Find the $8^{th}$ term of the A.P. is 5, + 8, 1 .....

(a) 22 (b) 24
(c) 25 (d) 26

## SECTION - B [12 Marks]

(6Q × 2M)

17. Find the value of $5X - 2Y + 3$, where $X = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, $Y = \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$

(a) $\begin{bmatrix} 4 & 4 \\ 7 & 13 \end{bmatrix}$ (b) $\begin{bmatrix} 4 & 7 \\ 4 & 13 \end{bmatrix}$

(c) $\begin{bmatrix} 4 & 4 \\ 13 & 7 \end{bmatrix}$ (d) $\begin{bmatrix} 13 & 7 \\ 4 & 4 \end{bmatrix}$

18. Using remainders theorem to factorise completely the following polynomial

$3x^2 - 2x^2 - 19x + 6$

(a) $(x - 2)(x + 3)(3x - 1)$
(b) $(x + 2)(x + 3)(3x - 1)$
(c) $(x - 2)(x - 3)(3x + 1)$
(d) None of these

19. Mr. Hemant reduce the no. of employes of his factory in the ratio 7 : 5 and increase their wages in the ratio of 8 : 13. In what ratio the wages will be increased or decreased

(a) 56 : 60 (b) 56 : 65
(c) 57 : 68 (d) 57 : 59

20. Solve the following inequations

$$\frac{2x+1}{3} \geq \frac{3x-2}{5}$$

(a) $x \geq -8$ (b) $x \geq -9$
(c) $x \geq -10$ (d) $x \geq -11$

21. Amit is a proprietor of a firm registered under GST. He paid GST on ₹ 2000 on purchase and collected 5000 on sale. What is the amount of GST payable?

(a) ₹ 3000 (b) ₹ 4000
(c) ₹ 5000 (d) ₹ 6000

**22.** Anushree deposited ₹ 100 per month for 50 month in a bank recurring deposited account. If the bank pay interest at the rate of 10% per annum, then find the amount she will get on maturity.

(a) ₹ 5150 (b) ₹ 5762
(c) ₹ 5172 (d) ₹ 5784

## SECTION – C [12 Marks]

(3Q × 4M)

**23.** A two digit no. is such that the product of the digit is 14. When 45 is added to both the numbers then the digit interchange the places. Find

(A) Unit digit of the no.

(a) 7 (b) 8
(c) 9 (d) 10

(B) Tens digit of the no.

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

(C) Product of the digit

(a) 12 (b) 13
(c) 14 (d) 15

(D) Sum of the digit

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

**24.** The ratio of sum of $n^{th}$ term of two A.P. is $\frac{7n+1}{4n+27}$. Find the ratio of their

(A) First terms of the A.P. $7n + 1$ part

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

(B) Common difference (d) of the A.P.

(a) 20 (b) 21
(c) 22 (d) 23

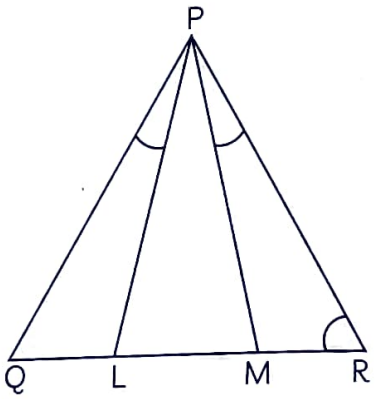
(C) Find the value of $n$

(a) 20 (b) 21
(c) 22 (d) 23

(D) Find the ratio of $11^{th}$ term of the A.P.

(a) 147 : 105 (b) 157 : 111
(c) 158 : 111 (d) 148 : 111

**25.** In a triangle $PQR$, $L$ and $M$ are the point on the base $QR$ such that $\angle LPQ = \angle QRP$ and $\angle RPM = \angle RQP$. Find the




(A) $\Delta PQL \sim \Delta RQP$

(a) AA (b) SAS
(c) SSS (d) ASA

(B) The value of $QL \times RM$

(a) $PL \times PM$ (b) $PQ \times RP$
(c) $LP \times QR$ (d) $PQ \times RQ$

(C) The ratio of $\frac{QL}{QP}$

(a) $\frac{PL}{PM}$ (b) $\frac{PQ}{RP}$

(c) $\frac{LP}{QR}$ (d) $\frac{PL}{RP}$

(D) The value of $PQ^2$

(a) $RQ \times LP$ (b) $PQ \times RP$
(c) $LP \times QR$ (d) $QR \times QL$

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## SECTION – A [16 Marks]

(16Q × 1M)

**1.** How many terms are there in the sequence

2, 5, 8, 11, ..... 104

(a) 35 (b) 40

(c) 45 (d) 60

**2.** Find $x$ for which

$$\begin{bmatrix} 2x & 3y \\ 4z & 5w \end{bmatrix} = \begin{bmatrix} 6 & 15 \\ 20 & 35 \end{bmatrix}$$

(a) 3 (b) 4

(c) 5 (d) 6

**3.** Which term of the A.P. 3, 15, 27, 39, ..... will be more than its $21^{st}$ term

(a) 31 (b) 32

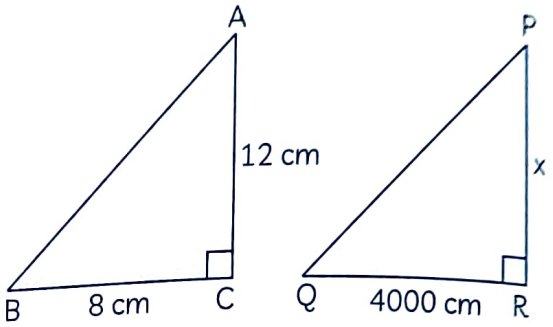
(c) 33 (d) 34

**4.** If $A = \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$ find the value of $x$ so that $A^2 = 0$.

(a) – 2 (b) – 1

(c) 1 (d) None of these

**5.** A vertical stick 12 cm long cast a shadow 8 cm long on the ground. At the same time, a Tower casts a shadow 40 m long on the ground. Determine the height of the tower




(a) 30 m (b) 40 m

(c) 50 m (d) 60 m

**6.** Factorise the following expression:

$2x^3 + x^2 - 13x + 6$

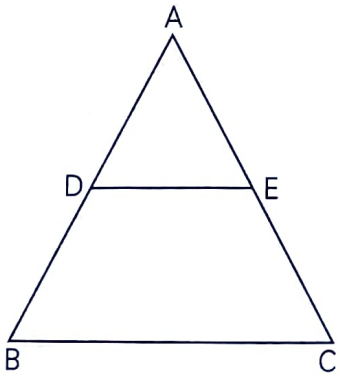
(a) $(x + 2)(2x - 1)(x + 3)$

(b) $(x - 2)(2x + 1)(x + 3)$

(c) $(x - 2)(2x - 1)(x + 3)$

(d) $(x - 2)(2x - 1)(x - 2)$

**7.** In $\triangle ABC$, $DE \parallel BC$, if $AD = x$, $DB = x - 2$, $AE = x + 2$ and $EC = x - 1$. Find $x$



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

8. Find the value of $m$, $x - 2 = 0$ is the factor of $x^2 - 2x + 2$.
(a) $\pm\sqrt{2}$ (b) $\pm\sqrt{3}$
(c) $\pm\sqrt{5}$ (d) $\pm\sqrt{7}$

9. Find the triplet ratio of 5 : 2
(a) 25/4 (b) 125/8
(c) 625/16 (d) None of these

10. If $A : B = 4 : 5$ and $B : C = 6 : 7$ find $A : C$
(a) 24 : 35 (b) 14 : 25
(c) 25 : 29 (d) 29 : 31

11. Form a quadratic equation when sum of root $= \sqrt{5}$ and product of root is $\sqrt{7}$
(a) $x^2 - \sqrt{5}x - \sqrt{7}$
(b) $x^2 + \sqrt{5}x + \sqrt{7}$
(c) $-x^2 - \sqrt{5}x - \sqrt{7}$
(d) $x^2 + \sqrt{5}x - \sqrt{7}$

12. Find the value of $m$ for which the root are equal
$$2mx^2 + 4x - 2 = 0$$
(a) 2 (b) 1
(c) 0 (d) – 1

13. Solve the equation $\frac{2x+1}{2} + 2(3 - x) > 7, x \in R$
(a) $x \leq \frac{-1}{2}$ (b) $x \geq \frac{1}{2}$
(c) $\frac{-1}{2} < x < \frac{-3}{2}$ (d) None of these

14. Solve the following inequation
$$\frac{-1}{5} \leq \frac{3x}{10} + 1 < \frac{2}{5}$$
(a) $-4 \leq x < -2$ (b) $-6 \leq x < -0$
(c) $-8 \leq x < -10$ (d) $-10 \leq x < -12$

15. The cost of item is ₹ 1000 and after imposing GST cost become ₹ 2500. Calculate the rate of GST for this item.
(a) 150% (b) 200%
(c) 300% (d) 400%

16. Rajat deposited ₹ 100 per month for 20 months in a bank recurring deposit account. If the bank pay interest at the rate of 20% per annum. Find the amount he get on maturity.
(a) ₹ 2150 (b) ₹ 2250
(c) ₹ 2350 (d) ₹ 2450

## SECTION – B [12 Marks]

(6Q × 2M)

17. The formula of cost price of GST is
(a) $\frac{\text{S.P.(GST)} \times 100}{100 + \text{rate of GST}}$
(b) $\frac{P \times R \times T}{100}$
(c) Discount% of MRP
(d) None of these

18. The formula of finding the value of maturity value
(a) $P \times \frac{n(n+1)}{2+12} \times \frac{r}{100}$
(b) $P \times n + I$
(c) $P \times R \times T$
(d) None of these

19. If $a$ is a positive real no. $|x| \in a \Rightarrow$ .....
(a) $-a \leq x \leq a$ (b) $x \leq -a$
(c) $x \geq a$ (d) None of these

20. Comparison of ratio $(a : b) > (c : d)$ .....
(a) $ad < bc$ (b) $ad = bc$
(c) $ad > bc$ (d) Both $a$ and $b$

21. A is identity matrix, then what is the value of $(A^T)^T$
(a) I
(b) A
(c) Both (a) and (b)
(d) None of these

22. What is the value of $P$ when $f(x)$ is a factor of $f(x)$
$$f(x) = x^3 + x^2 + px + 15$$
$$g(x) = x - 3$$
(a) – 17 (b) – 18
(c) 19 (d) 20



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## SECTION – C [12 Marks]

(3Q × 4M)

**23.** A rectangular garden plot 16 m by 24 m is to be bordered by a strip of uniform width $x$ m wide on the outside so as to double the area. Find:

(A) The area of the rectangular plot

(a) 384 $m^2$ (b) 385 $m^2$

(c) 386 $m^2$ (d) 387 $m^2$

(B) The area of the new rectangular garden

(a) 755 $m^2$ (b) 768 $m^2$

(c) 749 $m^2$ (d) 745 $m^2$

(C) The value of $x$

(a) 1 (b) 2

(c) 3 (d) 4

(D) The perimeter of new rectangular garden

(a) 105 m (b) 110 m

(c) 108 m (d) 112 m

**24.** The angle of a triangle are in A.P. if the greatest angle is twice the least. Find the

(A) Minimum angle

(a) 20° (b) 40°

(c) 60° (d) 80°

(B) Maximum angle

(a) 20° (b) 40°

(c) 60° (d) 80°

(C) Common difference

(a) 20° (b) 40°

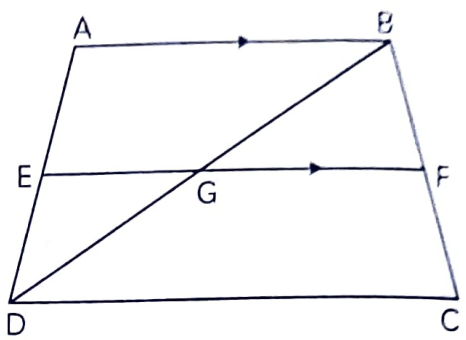
(c) 60° (d) 80°

(D) First angle of the A.P. [Measure other than maximum and minimum]

(a) 60° (b) 80°

(c) 100° (d) 120°

**25.** In a trapezium $ABCD$, $AB \parallel DC = 2AB$. $PE$ drawn parallel to $AB$ cut $AD$ in $F$ and $BC$ in $E$ such that $BE = 3EC$. Diagonal $DB$ intersect $EF$ at $G$. and $7FE = 10\ AB$.




(A) $\Delta BGE \sim \Delta BDC$ by the similarity

(a) AA (b) SAS

(c) SSS (d) ASA

(B) Find the ratio of $BG : BD$

(a) $\frac{1}{7}$ (b) $\frac{2}{7}$

(c) $\frac{3}{7}$ (d) $\frac{4}{7}$

(C) Find value of $FG$ is equal how many times of $AB$

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

(c) $\frac{5}{2}$ (d) $\frac{4}{7}$

(D) Find the ratio of $\frac{DG}{BD}$ =

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

(c) $\frac{7}{2}$ (d) $\frac{4}{7}$