

# Tenth Class Maths Paper-I Model Paper

(Problem solving)

Time: 2.45hrs Part A&amp;B

Max.Marks: 40

**Instructions:**

- i. Read the question paper and understand every question thoroughly. 15 minutes of time is allotted for this.
- ii. Answer the questions under Part - A on a separate answer book.
- iii. Write the answers to the questions under Part-B on the question paper itself and attach it to the answer book of part-A.
- iv. Answer all the questions from the given three sections.
- v. In section -III, answer any one alternative.

**Part – A**

Marks: 35

Time: 2.00Hrs

**SECTION - I****Note: Answer all the questions, each question carries 1 mark.** **$7 \times 1 = 7 \text{ m}$** 

1. Write  $\frac{429}{110}, \frac{15}{24}$  in decimal form. (by converting the denominator into  $10^n$  form i.e.  $2^{n5^n}$ ) (**Communication**)
2. The area of a rectangular plot is 168 sq. meters the length of the plot is 3 meters more than thrice of its breadth. Represent the situation in the form of a quadratic equation. (**Communication**)
3. Two vertices of a triangle are (4, 6) and (-6, 3) and its centroid is  $(-\frac{2}{3}, 3)$  Find the third vertex of the triangle  
**(Problem solving)**
4. Check whether  $\frac{1}{3}, \frac{-1}{6}, \frac{1}{12}, \dots$  is GP or not?  
If yes, find its 24<sup>th</sup> term.

**(Reasoning and proof)**

5. Check whether the equations  $3x - 3y = 24$  and  $4x - 6y = 15$  are consistent or not.  
**(Reasoning and proof)**
6. If  $A = \{x/x$  is a letter in the sentence 'same to you' then find the number of subsets of A.  
**(Problem solving)**
7.  $24x^3 + 8x^2 - 16x - 429$  is a cubic polynomial having zeroes  $\alpha, \beta, \gamma$  then find  
(i)  $\alpha + \beta + \gamma$  (ii)  $\alpha\beta + \beta\gamma + \gamma\alpha$  (iii)  $\alpha\beta\gamma$   
**(Problem solving)**

**SECTION-II****Note: Answer all the following questions. Each question carries 2 marks** **$6 \times 2 = 12 \text{ m}$** 

8. Show that the points (7, 13), (10, 8), (5, 5), (2, 10) are the vertices of a square.  
**(Reasoning and proof)**
9. Solve the linear equations  $x - 2y = 0$  and  $3x + 4y = 24$  by using graph method  
**(Representation and visualization)**
10. Verify whether or not -1, 1, 3 are the zeroes of the cubic polynomial  $-3x^3 + x^2 - x + 3$   
**(Reasoning and proof)**
11. The base of a triangle is 6 meters longer than its altitude. If the area of the triangle is 360 sq. meters then find the base and altitude of the triangle.  
**(Connection)**
12. The first term of an AP is 10. If the sum of first 24 terms is 3000. Then find the 24<sup>th</sup> term, when the common difference is 10.  
**(Problem solving)**

13. S is the set of multiples of 4, T is the set of multiples of 6, U is the set of multiples of 24. Then find the  $S \setminus T$ ,  $T \setminus U$  and  $S \setminus U$

**SECTION-III** **$4 \times 4 = 16 \text{ m}$** **Note:**

- i. Answer all the following questions.
- ii. Every question has internal choice to answer
- iii. Each question carries 4 marks.

14. (a) M is the set of perfect squares in Natural number set less than 100 and N is the set of multiples of 8 upto 100. Find  $M \cap N$ ,  $M - N$  and  $N - M$  by using Venn diagrams.

**(Representation & visualization)****(or)**

- (b) K [1, 4], L[1, 0], M[6, 0] are the vertices of a rectangle KLMN. By using graph paper, plot these points and find the coordinates of N.

**(Representation & visualization)**

15. (a) Find the points of trisection of line joining (-5, -7) and (-8, -10).

**(Problem solving)****(or)**

- (b) If  $\log\left(\frac{x+y}{3}\right) = \frac{1}{2}(\log x + \log y)$  then find  $\frac{x+y}{y-x}$ .

**(Problem solving)**

16. (a) The ratio of incomes of John and Supriya is 12 : 11 and the ratio of their expenditures is 9 : 8. If the saving of each of them is Rs. 6000 per month. Then find their monthly Incomes.

**(Connection)****(or)**

- (b) The product of two positive integers is 4290 and the two numbers differ by 23. Then find the two numbers.

**(Connection)**

17. (a) If the 3<sup>rd</sup> and 24<sup>th</sup> terms of an AP is 16 and -68 respectively. Then find which term of this AP is zero.

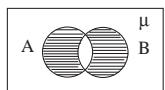
**(Problem solving)****(or)**

- (b) Find the quadratic polynomial, with the zeroes  $\alpha, \beta$  as given below  
i) 3, 8 ii)  $\sqrt{6}, -\sqrt{6}$  iii)  $\frac{1}{3}, \frac{2}{3}$

**PART-B****Time: 30 min****Marks: 5****Note:**

- i) Write the capital letters (A, B, C and D) shown the correct answer for the following questions in the brackets provided against them.
- ii) Answer all the questions.
- iii) Each question carries  $\frac{1}{2}$  mark.
- iv) Answers are to be written in question paper only.
- v) Marks will not be awarded in any case of overwriting, rewriting or erased answers.
1. The angle that the line passing through (-1, 1) and (1, 1) made with the X axis is \_\_\_\_\_. ( )  
A)  $90^\circ$       B)  $45^\circ$   
C)  $0^\circ$       D)  $280^\circ$
2. The  $n^{\text{th}}$  term of an AP is  $t_n = 6 + 3n$ , then the common difference is \_\_\_\_\_. ( )  
A) 6      B) 9  
C) -3      D) 3
3. If  $\alpha, \beta$  are the roots of  $x^2 - mx + n = 0$  then  $\alpha^3 + \beta^3 =$  \_\_\_\_\_. ( )

- A)  $n^3 - 3mn$       B)  $-3mn - n^3$   
 C)  $m^3 - 3mn$       D)  $+3mn - m^3$
4. For which value of M,  $4x^2 + mx - 2 = 0$  has no real roots \_\_\_\_ ( )  
 A)  $m < -\sqrt{32}$       B)  $m = 24$   
 C)  $m \geq -\sqrt{32}$       D)  $m = -\sqrt{32}$
5. The point of intersection of  $x + y = 18$  and  $x - y = 30$  is \_\_\_\_ ( )  
 A) (24, 6)      B) (-6, 24)  
 C) (24, -6)      D) (-24, 6)
6. The remainder when  $-5x^3 + 3x^4 + 3x + 4x^2 - 5$  is divided by  $x^2 - 3$  \_\_\_\_  
 A)  $12x + 34$       B)  $34x - 12$   
 C)  $-12x + 34$       D)  $12x - 34$
7.  $n(M) = 10$ ,  $n(N) = 6$  and  $n(M \Delta N) = 2$  then  $n(M \cup N) =$  \_\_\_\_ ( )  
 A) 18      B) 6  
 C) 2      D) 14
8. The beside Venn diagram represents \_\_\_\_ ( )  
 A)  $A - B$   
 B)  $(A - B) \cup (B - A)$   
 C)  $B - A$   
 D)  $(A - B) \cap (B - A)$
9. If  $2^m = n$  and  $\log_2 n = 4 \Rightarrow (m+n)^2$  \_\_\_\_ ( )  
 A) 20      B) 1024  
 C) 400      D) 4000
10. If a, b are two prime number then, their HCF is \_\_\_\_ ( )  
 A) ab      B) a/b      C) b/a      D) 1



## ANSWERS

### SECTION - I

1. (i)  $\frac{429}{110} = \frac{3 \times 11 \times 13}{2 \times 5 \times 11} = \frac{39}{10} = 3.9$

(ii)  $\frac{15}{24} = \frac{3 \times 5}{3 \times 2^3} = \frac{5}{2^3} = \frac{5 \times 5^3}{2^3 \times 5^3}$   
 $= \frac{5^4}{10^3} = \frac{625}{1000} = 0.625$

2. Let the breadth of the rectangular plot be  $b = x$  meters

then, the length of the plot will be  
 $l = (3x + 3)$  meters.

Area of the plot =  $l \times b = (3x + 3)(x)$   
 $= (3x + 3)x = 3x^2 + 3x$

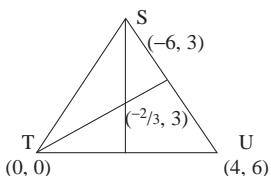
Given that the area is 168 meter<sup>2</sup>

$\Rightarrow 3x^2 + 3x = 168$

$\Rightarrow x^2 + x = 56$

$\Rightarrow x^2 + x - 56 = 0$  is the required quadratic equation.

3. Given that S(-6, 3), U(4, 6) be two points of  $\Delta STU$  and the centroid  
 $G = (-\frac{2}{3}, 3)$



Let the third vertex be  $T(x_1, y_1)$

$$\Rightarrow G = \left[ \frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3} \right]$$

$$\Rightarrow \left( \frac{-2}{3}, 3 \right) = \left[ \frac{4 + (-6) + x_1}{3}, \frac{3 + 6 + y_1}{3} \right]$$

$$\Rightarrow \frac{-2}{3} = \frac{-2 + x_1}{3}, 3 = \frac{9 + y_1}{3}$$

$$\Rightarrow x_1 = 0, y_1 = 0$$

$\Rightarrow T(0, 0)$  is the third vertex of the triangle

4. Given progression  $\frac{1}{3}, \frac{-1}{6}, \frac{1}{12}, \dots$

$$t_1 = \frac{1}{3}, t_2 = \frac{-1}{6}, t_3 = \frac{1}{12}, \dots$$

$$\frac{t_2}{t_1} = \frac{-1/6}{1/3} = \frac{-1}{2} \dots$$

$$\frac{t_3}{t_2} = \frac{1/12}{-1/6} = \frac{-1}{2} \dots$$

$$\therefore r = \frac{t_2}{t_1} = \frac{t_3}{t_2} = \dots = \frac{-1}{2}$$

$\therefore \frac{1}{3}, \frac{-1}{6}, \frac{1}{12}, \dots$  forms a G.P.

$$t_n = a.r^{n-1}$$

$$t_{24} = \frac{1}{3} \times \left( \frac{-1}{2} \right)^{24-1} = \frac{-1}{3 \times 2^{23}}$$

5. The given two linear equations are  $2x - 3y = 24$ ,  
 $4x - 6y = 15$

Comparing with the general form of linear equation

$$a_1 = 2, b_1 = -3, c_1 = -24$$

$$a_2 = 4, b_2 = -6, c_2 = -15$$

$$\frac{a_1}{a_2} = \frac{2}{4} = \frac{1}{2}; \frac{b_1}{b_2} = \frac{-3}{-6} = \frac{1}{2};$$

$$\frac{c_1}{c_2} = \frac{-24}{-15} = \frac{8}{5}$$

as  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2} \Rightarrow$  Given two linear equations are inconsistent.

Hence they have no solution

6. Given that  $A = \{x/x \text{ is a letter in the word "same to you"}\}$   
 $= \{a, e, m, o, s, t, y, u\}$

$$n(A) = 8$$

Number of subsets of a set, having m elements is  $2^m$ .

$\therefore$  The number of subsets of A =  $2^8 = 256$

7. Let the given cubical polynomial be

$$f(x) = 24x^3 + 8x^2 - 16x - 429 \text{ where}$$

$$a = 24, b = 8, c = -16, d = -429$$

$\alpha, \beta, \gamma$  are the zeroes of  $f(x)$

$$(i) \alpha + \beta + \gamma = \frac{-b}{a} = \frac{-(8)}{24} = \frac{-1}{3}$$

$$(ii) \alpha\beta + \beta\gamma + \gamma\alpha = \frac{c}{a} = \frac{-16}{24} = \frac{-2}{3}$$

$$(iii) \alpha\beta\gamma = \frac{-d}{a} = \frac{429}{24} = \frac{143}{8}$$

### SECTION - II

8. Let K(7, 13), L(10, 8), M(5, 5) and N(2, 10) are the four given points.

To prove that the given four points are the vertices of a square, we need to show that all of its sides are equal along with the diagonals are also equal

∴ From the formula distance between the two points

$$KL = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(10-7)^2 + (8-13)^2} = \sqrt{9+25} = \sqrt{34} \text{ units}$$

$$LM = \sqrt{(5-10)^2 + (5-8)^2} = \sqrt{25+9} = \sqrt{34} \text{ units}$$

$$MN = \sqrt{(5-2)^2 + (5-10)^2} = \sqrt{9+25} = \sqrt{34} \text{ units}$$

$$KN = \sqrt{(2-7)^2 + (10-13)^2} = \sqrt{25+9} = \sqrt{34} \text{ units}$$

$$KM = \sqrt{(5-7)^2 + (5-13)^2} = \sqrt{4+64} = \sqrt{68} \text{ units}$$

$$LN = \sqrt{(2-10)^2 + (10-8)^2} = \sqrt{64+4} = \sqrt{68} \text{ units}$$

∴ The sides of the given quadrilateral are equal, and the diagonals are also equal.

⇒ The given four points are the vertices of a square

Hence proved.

9. Let the given equation be

$$x - 2y = 0 \Rightarrow y = x/2$$

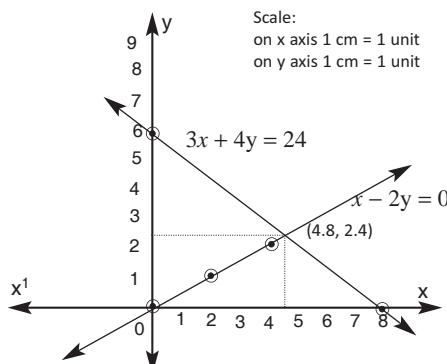
$$3x + 4y = 24 \Rightarrow y = \frac{24-3x}{4}$$

$$x - 2y = 0$$

x	$y = \frac{x}{2}$	(x, y)
0	0	(0, 0)
2	1	(2, 1)
4	2	(4, 2)

$$3x + 4y = 24$$

x	$y = \frac{24-3x}{4}$	(x, y)
0	$\frac{24-0}{4} = 6$	(0, 6)
8	$\frac{24-3 \times 8}{4} = 0$	(8, 0)



The two lines meet at (4.8, 2.4). Hence the solution of equations (1) and (2) is  $x = 4.8$ ,  $y = 2.4$

10. Let the given cubic polynomial be

$$f(x) = x^3 - 3x^2 - x + 3 \text{ and we need to check whether } -1, 1, 3 \text{ are zeroes of } f(x)$$

$$\text{for } x = -1, f(-1) = (-1)^3 - 3(-1)^2 - (-1) + 3$$

$$= -1 - 3 + 1 + 3 = 0$$

$$\Rightarrow -1 \text{ is a zero of } f(x)$$

$$\text{for } x = 1, f(1) = (1)^3 - 3(1)^2 - (1) + 3$$

$$= 1 - 3 - 1 + 3$$

$$= 0$$

$$\Rightarrow 1 \text{ is another zero of } f(x)$$

$$\text{for } x = 3, f(3) = (3)^3 - 3(3)^2 - (3) + 3$$

$$= 27 - 27 - 3 + 3$$

$$= 0$$

⇒ 3 is also a zero of  $f(x)$

Hence verified.

11. Let the altitude of the triangle be  $h = x$  meters

And given that base

is 6 meters longer

than the altitude

$$\Rightarrow b = (x + 6) \text{ meters.}$$

also given that area of the triangle

$$= 360 \text{ sq. meters}$$

$$\Rightarrow \frac{1}{2} \times \text{base} \times \text{height} = 360 \text{ sq. meters.}$$

$$\Rightarrow \frac{1}{2} \times (x + 6)(x) = 360$$

$$\Rightarrow x^2 + 6x = 720$$

$$\Rightarrow x^2 + 6x - 720 = 0$$

$$\Rightarrow x^2 + 30x - 24x - 720 = 0$$

$$\Rightarrow x(x + 30) - 24(x + 30) = 0$$

$$\Rightarrow (x + 30)(x - 24) = 0$$

$$\Rightarrow x + 30 = 0 \text{ or } x - 24 = 0$$

$$\Rightarrow x = -30 \text{ or } x = 24$$

as  $x$  cannot be negative,

⇒ The altitude of the triangle  $x = 24$  meters.

The base of the triangle,  $x + 6 = 30$  meters.

12. Given that the first term of an AP  $a = 10$

Common difference  $d = 10$

Sum of first 24 terms  $S_{24} = 3000$

We need to find the 24<sup>th</sup> term, of course last term in this situation.

Let the 24<sup>th</sup> term of last term of the AP be  $l$

$$\Rightarrow S_n = \frac{n}{2}[a+l] = 3000$$

$$\Rightarrow \frac{24}{2}[10+l] = 3000$$

$$\Rightarrow 120 + 12l = 3000$$

$$\Rightarrow 12l = 2880$$

$$\Rightarrow l = \frac{2880}{12} = 240$$

∴ The 24<sup>th</sup> term = 240

13. Given that

$S$  = set of multiples of 4.

$$= \{4, 8, 12, 16, 20, 24, \dots\}$$

$T$  = Set of multiples of 6.

$$T = \{6, 12, 18, 24, 30, \dots\}$$

$U$  = Set of multiples of 24.

$$= \{24, 48, 72, 96, 120, \dots\}$$

Now, i)  $S \cap T = \{4, 8, 12, 16, 20, 24, \dots\} \cap \{6, 12, 18, 24, 30, \dots\} = \{12, 24, 36, 48, \dots\}$

$$\text{ii) } T \cap U = \{6, 12, 18, 24, 30, \dots\} \cap \{24, 48, 72, 96, 120, \dots\} = \{24, 48, 72, 96, 120, \dots\}$$

$$\text{iii) } S \cup U = \{4, 8, 12, 16, 20, 24, \dots\} \cup \{24, 48, 72, 96, 120, \dots\} = \{24, 48, 72, 96, 120, \dots\}$$

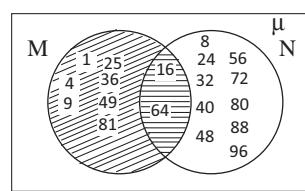
### SECTION - III

14. (a) Given that  $M$  is the set of perfect squares in natural number set less than 100

$$\Rightarrow M = \{1, 4, 9, 16, 25, 36, 49, 64, 81\}$$

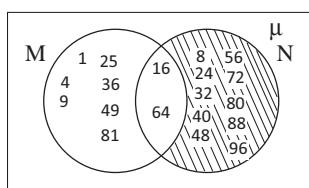
$N$  is the set of multiples of 8 up to 100.

$$\Rightarrow N = \{8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96\}$$



$$M \cap N = \{16, 64\}$$

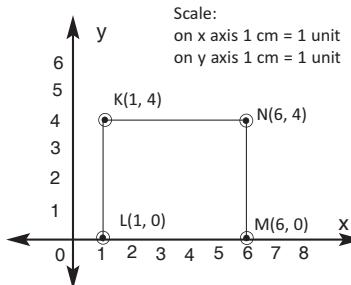
$$M - N = \{1, 4, 9, 25, 36, 49, 81\}$$



$$N - M = \{8, 24, 32, 40, 48, 56, 72, 80, 88, 96\}$$

(or)

(b) Given that K[1, 4], L[1, 0], M[6, 0], are the three vertices of a rectangle KLMN



From the graph vertex of N is the intersecting point of KN and MN, Hence the co-ordinates of N are [6, 4]

15. (a) Let L and M be the points of trisection of the line joining the given points K(-5, -7) and N(-8, -10) i.e. L divides the line segment  $\overline{KN}$  in the ratio 1:2, and M divides the line segment  $\overline{KN}$  in the ratio 2:1 internally

$\therefore$  The co-ordinates of L

$$\begin{aligned} &= \left[ \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}, \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2} \right] \\ &= \left[ \frac{1(-8) + 2(-5)}{1+2}, \frac{1(-10) + 2(-7)}{1+2} \right] \\ &= \left[ \frac{-18}{3}, \frac{-24}{3} \right] = [-6, -8] \end{aligned}$$

and the co-ordinates of M

$$\begin{aligned} &= \left[ \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}, \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2} \right] \\ &= \left[ \frac{2(-8) + 1(-5)}{2+1}, \frac{2(-10) + 1(-7)}{2+1} \right] \\ &= \left[ \frac{-21}{3}, \frac{-27}{3} \right] = [-7, -9] \end{aligned}$$

$\therefore$  The points of trisection of the line segment  $\overline{KN}$  are [-6, -8] and [-7, -9]

(or)

- b) Given that  $\log\left(\frac{x+y}{3}\right) = \frac{1}{2}(\log x + \log y)$

$$\Rightarrow \log\left[\frac{x+y}{3}\right] = \frac{1}{2}\log[xy]$$

$[\because \log(mn) = \log m + \log n]$

$$\Rightarrow \log\left[\frac{x+y}{3}\right] = \log(xy)^{\frac{1}{2}}$$

$$\left[ \because \log(x)^{\frac{1}{n}} = \frac{1}{n} \log x \right]$$

by removing logs on both sides

$$\Rightarrow \left[ \frac{x+y}{3} \right] = \sqrt{xy}$$

$$\Rightarrow (x+y) = 3\sqrt{xy}$$

squaring both sides

$$(x+y)^2 = [3\sqrt{xy}]^2$$

$$\Rightarrow x^2 + y^2 + 2xy = 9xy$$

$$\Rightarrow x^2 + y^2 = 9xy - 2xy$$

dividing both sides by 'xy'

$$\Rightarrow \frac{x^2 + y^2}{xy} = \frac{7xy}{xy} \Rightarrow \frac{x}{y} + \frac{y}{x} = 7$$

16. (a) Given that the ratios of monthly incomes of John and Supriya is 12 : 11

Their incomes will be  $12x$ ,  $11x$  respectively the ratio of their expenditures is 9 : 8

i.e. their expenditures will be  $9y$ ,  $8y$  respectively.

$$\therefore \text{The savings of John is represented by } 12x - 9y = 6000 \quad (1)$$

The savings of Supriya will be obtained by

$$11x - 8y = 6000 \quad (2)$$

By the method of elimination

$$(1) \times 11 - (2) \times 12$$

$$132x - 99y = 66000$$

$$132x - 96y = 72000$$

$$\underline{- \quad + \quad -}$$

$$-3y = -6000$$

$$\Rightarrow y = 2000$$

$$(1) \Rightarrow 12x - 18000 = 6000$$

$$\Rightarrow 12x = 6000 + 18000$$

$$\Rightarrow 12x = 24000$$

$$\Rightarrow x = \frac{24000}{12} = 2000$$

$\therefore$  The income of John per month

$$= 12x = \text{Rs. } 24000$$

Similarly Monthly income of Supriya

$$= 11x = \text{Rs. } 22000$$

16. (b) Let the required two numbers be m and n respectively. Given that they differ by 23

$$\Rightarrow m - n = 23 \Rightarrow m = 23 + n \quad (1)$$

and product of the numbers is  $m \cdot n = 4290$

$$\text{form (1)} \Rightarrow (23 + n)(n) = 4290$$

$$\Rightarrow 23n + n^2 = 4290 \Rightarrow n^2 + 23n - 4290 = 0$$

Which is a quadratic equation in n

$$n^2 + 78n - 55n - 4290 = 0$$

$$n[n + 78] - 55[n + 78] = 0$$

$$\Rightarrow [n + 78][n - 55] = 0$$

$$\Rightarrow n + 78 = 0 \text{ (or) } n - 55 = 0$$

$$\Rightarrow n = -78 \text{ or } n = 55$$

But n may not be negative  $\Rightarrow n = 55$

$$\text{from (1)} \Rightarrow m = n + 23 = 55 + 23 = 78$$

$\therefore$  The required two numbers are 55, 78

17. (a) General term of AP,  $t_n = a + (n-1)d$

Given that the 3<sup>rd</sup> term of the AP is 16

$$\Rightarrow t_3 = a + (3-1)d = 16$$

$$\Rightarrow a + 2d = 16 \quad (1)$$

24<sup>th</sup> term of the AP is -68

$$\Rightarrow t_{24} = a + (24-1)d = -68$$

$$\Rightarrow a + 23d = -68 \quad (2)$$

$$(2) - (1) \Rightarrow a + 23d = -68$$

$$\begin{array}{r} a + 2d = 16 \\ - - - - - \\ 21d = -84 \end{array}$$

$$\Rightarrow d = -4, \text{ From (1)}$$

$$\Rightarrow a + 2d = 16 \Rightarrow a + 2(-4) = 16$$

$$\Rightarrow a - 8 = 16 \Rightarrow a = 24$$

Let the n<sup>th</sup> term of AP be '0'

$$\Rightarrow t_n = 0 \Rightarrow a + (n-1)d = 0$$

$$\Rightarrow 24 + (n-1)(-4) = 0$$

$$(n-1)(-4) = -24$$

$$n-1 = \frac{-24}{-4} = 6 \Rightarrow n = 6 + 1 = 7$$

∴ The 7<sup>th</sup> term of the AP is zero

(or)

(b) The general form of quadratic polynomial whose zeroes are  $\alpha, \beta$

is

$$x^2 - (\alpha + \beta)x + \alpha\beta$$

(i) Given that  $\alpha = 3$  and  $\beta = 8$

Sum of the roots of  $\alpha + \beta = 3 + 8 = 11$

Product of the roots,  $\alpha\beta = 3 \times 8 = 24$

∴ The required quadratic polynomial whose zeroes are 3, 8 is

$$x^2 - (\alpha + \beta)x + \alpha\beta = x^2 - 11x + 24$$

(ii) Given that  $\alpha = \sqrt{6}$ ,  $\beta = -\sqrt{6}$

Sum of the zeroes  $\alpha + \beta = [\sqrt{6} + (-\sqrt{6})] = 0$

Product of zeroes  $\alpha\beta = (\sqrt{6})(-\sqrt{6}) = -6$

∴ The required quadratic polynomial whose roots are  $\sqrt{6}, -\sqrt{6}$  is

$$x^2 - (\alpha + \beta)x + \alpha\beta = x^2 - (0)x + (-6) = x^2 - 6$$

(iii) Given that  $\alpha = \frac{1}{3}, \beta = \frac{2}{3}$

$$\text{Sum of the zeroes } \alpha + \beta = \frac{1}{3} + \frac{2}{3} = \frac{1+2}{3} = 1$$

$$\text{Product of the zeroes } \alpha\beta = \frac{1}{3} \times \frac{2}{3} = \frac{2}{9}$$

∴ The required quadratic polynomial

whose zeroes are  $\frac{1}{3}$  and  $\frac{2}{3}$  is

$$x^2 - (\alpha + \beta)x + \alpha\beta = x^2 - (1)x + \frac{2}{9}$$

$$= 9x^2 - 9x + 2$$

#### PART-B

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1) C | 2) D | 3) C | 4) A | 5) C  |
| 6) C | 7) D | 8) B | 9) C | 10) D |