SYLLABUS :LINEAR EQUATION AND TWO VARIABLES, QUADRATIC EQUATIONS, ARTHEMETIC PROGRESSIONS, REAL NUMBER, POLYNOMIALS, CO - ORDINATE GEOMETRY, CONSTRUCTIONS, SIMILAR TRIANGLES.

GENERAL INSTRUCTIONS : Draw Diagrams with Pencils.

- All questions arecompulsory. **Maximum Marks are 60**.
- The question paper consists of 25 Questions.
- **Section – A** : Question 1 to 10 are 1mark each.
- **Section – B** : Question 11 to 13 are 2 marks each.
- **Section – C** : Question 14 to 21 are 3 marks each.
- **Section – D** : Question 22 to 26 are 4 marks each.

SECTION A : (1 ×10 = 10)

1. For any positive integer a and 3, there exist unique integers q and r such that a = 3q + r, where r must satisfy:

(a) $0 \leq r < 3$ (b) $1 < r < 3$ (c) $0 < r < 3$ (d) $0 < r \leq 3$

2. The quadratic polynomial whose sum of zeroes is 3 and product of zeroes is -2 is:

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

3. If p(x) = ax + b, then zero of p(x) is:

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

4. What will be the degree of linear equation in two variables?

(a) 0 (b) 1 (c) 2 (d) none of these

5. The distance of the point P(5, -12) from the origin is:

(a) 17 units (b) 7 units (c) 4 units (d) 13 units

6. The value of $(\sqrt{5} + \sqrt{2})(\sqrt{5} - \sqrt{2})$ is:

(a) 10 (b) 7 (c) 3 (d) $\sqrt{3}$

7. The sides of two similar triangles are in the ratio 5 : 7, then the area of these triangles are in the ratio ..... .

8. The pair of lines represented by the equations 3x + y + 3 = 0 and 6x + ky + 5 = 0 will be parallel if value of k is ..... .

OR

If the quadric equation $x^2 - 2x + k = 0$ has equal roots, then the value of k is ..... .

9. 175 can be expressed as a product of its primes as :

(a) $5^2 \times 7$ (b) $5^2 \times 13$ (c) 5×13^2 (d) $2 \times 3^2 \times 5^2$

10. The product of the zeroes of the polynomial $2x^2 - 1x - 3$ is :

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

SECTION B : (2× 3 = 6)

11. Find the ratio between the LCM and HCF of 5, 15 and 20.

12. Find the middle term of the AP -6, -2, 2, ..., 58.

OR

Find 10th term from end of the AP 4, 9, 14, ..., 254.

13. For what value of p will the following pair of linear equations have infinitely many solutions?

$(p - 3)x + 3y = p$; $px + py = 12$

OR

If one diagonal of a trapezium divides the other diagonal in the ratio 1 : 3, prove that one of the parallel sides is three times the other.

SECTION C : (3× 8 = 24)

14. Find the zeroes of the quadratic polynomial $x^2 - 3x - 10$ and verify the relationship between the zeroes and coefficient.

15. Draw a circle of radius 4 cm. From the point 7 cm away from its centre, construct the pair of tangents to the circle.

OR

Draw a line segment of length 8 cm and divide it in the ratio 2 : 3.

16. Find the area of a triangle, whose sides are along the lines x = -5, y = 0 and 3x + 5y = 20.

OR

Find the area of a triangle ABC with vertex A (1, -4) and the mid – points of the sides through A being (2, -1) and (0, -1).

17. On dividing $x^3 - 3x^2 + x + 2$ by a polynomial g(x), the quotient and remainder were x – 2 and -2x + 4, respectively. Find g(x).

18. Solve : $s - t = 3$

$$\frac{s}{3} + \frac{t}{2} = 6$$

19. Prove $\sqrt{3}$ is an irrational number.

20. Find a cubic polynomial with the sum, sum of the product of its zeroes taken two at a time, and the product of its zeroes as 2, -7, -14 respectively.

OR

Solve : $3x - y = 3$

$9x - 3y = 9$

21. If A and B are (-2 , -2) and (2, -4), respectively find the coordinates of P such that AP = $\frac{3}{7}$ AB and P lies on the line segment AB.

SECTION D : (4×5 = 20)

22. A fraction becomes $\frac{8}{11}$, if 2 is added to both the numerator and the denominator. If 3 is added to both the numerator and the denominator it becomes $\frac{5}{6}$. Find the fraction.

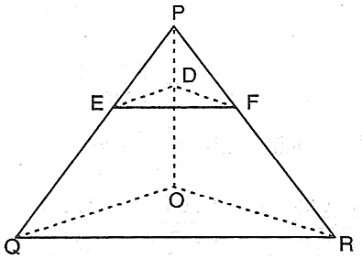
23. Find n and a_n of an AP : 2, 10, 18, ..., if its sum of nth term is 90.

OR

How many terms of the AP : 9, 17, 25, ... must be taken to give a sum of 636?

24. In a class test, the sum of Shefali's marks in Mathematics and English is 30. Had she got 2 marks more in mathematics and 3 marks less in English, the product of their marks would have been 210. Find her marks in the two subjects.

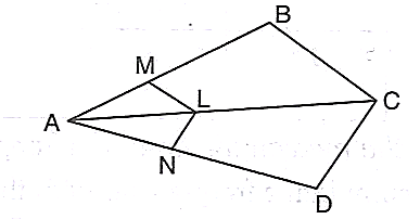
25. In figure, DE || OQ and DF || OR. Show that EF || QR.



OR

Prove that the ratio of areas of two similar triangles is equal to the ratio of the squares of their corresponding sides.

26. In figure, if LM || CB, LN || CD, prove that $\frac{AM}{AB} = \frac{AN}{AD}$.



OR

ABCD is a trapezium in which AB || DC and its diagonals intersect each other at the point O. Show that $\frac{AO}{BO} = \frac{OC}{OD}$.