SYLLABUS : FULL SYLLABUS

GENERAL INSTRUCTIONS : Draw Diagrams with Pencils.

- All questions are compulsory. **Maximum Marks are : 80**
- The question paper consists of 40 Questions.
- **Section – A** : Question 1 to 20 are 1mark each.
- **Section – B** : Question 21 to 26 are 2 marks each.
- **Section – C** : Question 27 to 34 are 3 marks each.
- **Section – D** : Question 35 to 40 are 4 marks each.

SECTION A : (1 × 20 = 20)

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. 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) $2 \times 3^2 \times 5^2$

8. 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) $\frac{3}{2}$

9. The distance of the point P (2, -3) form the x –axis is:
(a) $\sqrt{13}$ units (b) 2 units (c) -3 units (d) 3 units

10. Which of the following is the decimal expansion of an irrational number?
(a) 4.561 (b) $0.\overline{12}$ (c) 5.010010001 (d) 6.03

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

12. 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 ..... .

13. The value of sin 10° cos 80° + sin 80° cos 10° is ..... .

14. The point which divides the line segment joining the points A (0, 5) and B (5,0) internally in the ratio 2 : 3 is ..... .

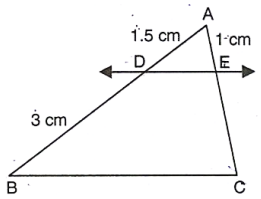
15. The value of sin 60° cos 30° + sin 30° cos 60° is ..... .

16. Value of cos 0° . cos 30°. cos 45° . cos 60° . cos 90° is ..... .

17. Δ PQR is right – angled isosceles triangle, right – angled at R. Find value of sin P.

18. A dice is thrown once. Find the probability of getting a prime number.

19. In the given figure, if DE || BC. Find EC.



20. Find the common difference of the AP whose first term is 12 and fifth term is 0.

SECTION B : (2× 6 = 12)

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

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

OR

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

23. 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.

24. Show that tan 48° tan 23° tan 42° tan 67° = 1.

OR

Evaluate : cos 48° cos 42° - sin 48° sin 42°.

25. Prove that the perpendicular at the point of contact to the tangent to a circle passes through the centre.

26. A box contains cords bearing numbers from 6 to 70. If one card is drawn at random from the box, find the probability that it bears (i) a number divisible by 5 (ii) a composite number between 50 and 70.

SECTION C : (3× 8 = 24)

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

28. 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.

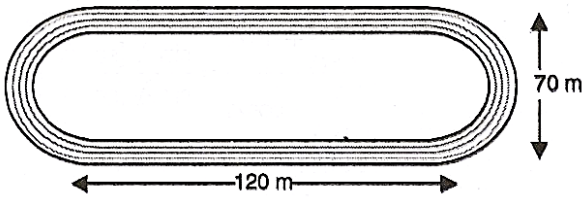
29. Find the area of a triangle, whose sides are along the lines x = -5, y = 0 and 3x + 5y = 20.

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).

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

31. Following figure depicts a park where two opposite sides are parallel and left and right ends are semi – circular in shape. It has a 7 m wide track for walking.



Two friends Seema and Meena went to the park. Meena said that area of the track is 4066 m. Is she right? Explain.

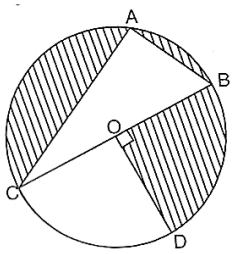
32. Prove that: $(\text{cosec}\ \theta - \cot\ \theta)^2 = \frac{1-\text{coc}\theta}{1+\cos\theta}$

OR

Prove that: $\frac{\sin\theta-\cos\theta+1}{\sin\theta+\cos\theta-1} = \frac{1}{\sec\theta-\tan\theta}$

33. Solve 2x + 3y = 11 and x – 2y = -12 algebraically and hence find the value of 'm' for which y = mx + 3.

34. In the given figure, O is the centre of the circle with AC = 24 cm, AB = 7 cm and ∠BOD =90°. Find the area of the shaded region. (use π 3.14)



SECTION D : (4×5 = 20)

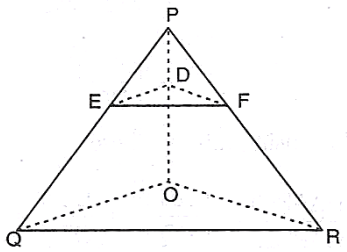
35. A fraction becomes$\frac{8}{11}$, if 2 is added to both the numerator and the denominator. If 3 is added to both the numerator and the denominator it becomes $\frac{5}{6}$. Find the fraction.

36. 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?

37. 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.

38. The following distribution gives the daily income of 50 workers of a factory:

Daily income	400 – 420	420 - 440	440 – 460	460 – 480	480 – 500
Number of workers	12	14	8	6	10

Convert this distribution to less than type of cumulative frequency distribution and draw its ogive.

39. A copper rod of diameter 1 cm and length 8 cm is drawn in to a wire of length 18 m of uniform thickness. Find the thickness of wire.

OR

A metallic sphere of radius 4.2 cm is melted and recast into the shape of a cylinder of radius 6 cm. Find the height of the cylinder.

40. As observed from the top of a 75 m high lighthouse above the sea level, the angels of depression of two ships is 30° and 45° respectively. If one ship is exactly behind the other on the same side of the lighthouse and in the same straight line, find the distance between the two ships. (use $\sqrt{3}$ = 1.732)