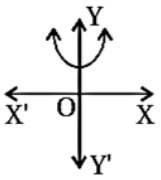
Section A

● **Write the answer of the following questions. [Each carries 1 Mark]** **[24**

1. The graph of $y = p(x)$ is given below. The number of zeroes of $p(x)$ is ..... .



(A) 1
(B) 2
(C) 3
(D) 0

2. If the linear equations in two Variables are consistent, then the lines are .....
(A) Intersecting (B) Parallel
(C) Always coincident (D) Intersecting or coincident

3. The formula to find discriminant of the quadratic equation is ..... .
(A) $D = b^2 + 4ac$ (B) $D = b^2 - 4ac$ (C) $D = b - 4ac$ (D) $D = c^2 - 4ab$

4. The formula to find n^{th} term of an AP is .....
(A) $a_n = a + (n - 1)d$ (B) $a_n = a - (n - 1)d$
(C) $a_n = a + (n + 1)d$ (D) None

5. The distance of the point $P(x, y)$ from the origin is .....
(A) $x^2 + y^2$ (B) $\sqrt{x^2 + y^2}$ (C) $x + y$ (D) None

6. The linear equations in two variables has infinite solutions if lines are ..... .
(coincident, parallel, intersecting)

7. The sum of first 16 terms of an AP 10, 6, 2 ... is ..... (320, 230, –320)

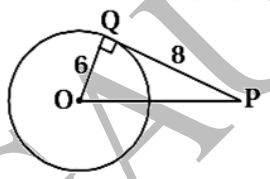
8. $\sin\theta \cdot \tan\theta + \cos\theta =$ ..... .(sec θ, tan θ, cos θ)

9. $2 - \sec\theta \cdot \cos\theta =$ ..... (2, 8, 1)

10. If a line intersects the circle in one and only one point then it is the tangent to the circle.

11. Probability of any event can't be zero.

12. In the following figure, PQ is a tangent to the circle with centre O. Find OP.



13. Find the mean of all factors of 12.

14. If mode = 35 and mean $\bar{x}$ = 35 then find median.

15. Which of the following cannot be the probability of an event ?
(A) $\frac{2}{3}$ (B) 0.7 (C) 15 (D) –1.5

16. P(A') = 0.57 then P(A) .....
(A) $\frac{27}{100}$ (B) 0.013 (C) 0.43 (D) 0

17. The graph of $p(x) = 3x + 5$ is a ..... (Ray, Line segment, Line)

18. The HCF of 15 and 35 is ..... .
(A) 5 (B) 7 (C) 105 (D) 15

19. HCF (12, 21) = ... (1, 3, 7)

20. Mean = 25 and mode = 25 then median = ...

(A) 25 (B) 0 (C) 1 (D) 75

21. Match the following with correct alternative :

Part-A	Part-B
The curved surface area of five rupees coin is	(a) $2\pi rh$ (b) $2\pi rh + 2\pi r^2$

22. Match the following with correct alternative :

Part-A	Part-B
Formula to find the curved surface area of a sphere is	(a) $2\pi r'$ (b) $4\pi r^2$

23. Match the following with correct alternative :

Part-A	Part-B
The circumference of a circle with diameter 1 cm is ..... cm.	(a) π (b) 2π

24. Match the following with correct alternative :

Part-A	Part-B
The great mathematical genius ..... of India gave the value of π = 3.146.	(a) Aryabhatta (b) Shrinivas Ramanujan

Section B

● **Write the answer of the following [any 9] [each carries 2 marks]** **[18]**

25. Find the zeroes of a quadratic polynomial $x^2 + 7x + 10$ verify the relationship between the zeroes and the coefficients.

26. Find a quadratic polynomial, the sum and the product of whose zeroes are 0 and –3 respectively.

27. Evaluate the following : $\dfrac{\cos 45°}{\sec 30° + \operatorname{cosec} 30°}$

28. Find the 10^{th} term of the AP : 2, 7, 12, ...

29. In an Arithmetic Progression $a = 5$, $d = 3$, $a_n = 50$ then find "n".

30. Find the nature of the roots of the given quadratic equation. If the real roots exist, find them :
$x^2 + 5x + 1 = 0$

31. Find a point on the Y-axis which is equidistant from the points P(6, 5) and Q(– 4, 3).

32. Find the area of the rhombus whose vertices are (3, 0), (4, 5), (–1, 4) and (–2, –1).

33. A survey was conducted by a group of students regarding the number of family members in 40 families then find mode.

No. family members	1 – 3	3 – 5	5 – 7	7 – 9	9 – 11
No. families	14	16	4	4	2

34. The angle of elevation of the top of a tower from a point on the ground, which is 60 m away from the foot of the tower is 30°. Find the height of the tower.

35. 2 cubes each of volume 1000 cm^3 are joined end to end. Find the total surface area of the resulting cuboid.

36. A vessel is in the form of a hollow hemisphere mounted by a hollow cylinder. The diameter of the

hemisphere is 14 cm and the total height of the vessel is 13 cm. Find the inner surface area of the vessel.

37. Given 15 cot A = 8, find sin A and sec A.

Section C

● **Write the answer of the following [any 6] [each carries 3 marks]** **[18]**

38. Solve the given pair of equations by substitution method :
$0.2x + 0.3y = 1.3$ ....(i)
$0.4x + 0.5y = 2.3$ ....(ii)

39. Solve the pair of equations : $2x + 3y = 7$, $3x - 4y = 2$ by elimination method.

40. The tangent at any point of a circle is perpendicular to the radius through the point of contact.

41. Find the sum of the following AP : 2, 7, 12, ..., to 10 terms.

42. If A and B are (–2, 8) and (8, –7) respectively. Find the coordinates of P such that AP = $\frac{2}{5}$ AB and P lies on the line segment AB.

43. Prove that the parallelogram circumscribing a circle is a rhombus.

44. The quadrilateral whose vertices are A(1, 0), B(7, 0), C(6, 3) and D(2, 3). Find it's area.

45. A die is thrown once. Find the probability of getting
(i) a prime number.
(ii) a number lying between 2 and 6.
(iii) an odd number.

46. The following table gives the distribution of life time in hrs for 225 electric equipments. Find the mean life time.

Life time (in hrs)	0 – 200	200 – 400	400 – 600	600 – 800	800 – 1000	1000 – 1200
Frequency	9	35	50	61	38	32

Section D

● **Write the answer of the following [any 5] [each carries 4 marks]** **[20]**

47. A train travels 360 km at a uniform speed. If the speed had been 5 km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train.

48. Which term of the AP 3, 15, 27, 39, ... will be 132 more than its 54^{th} term.

49. Write converse of Thales theorem and prove it.

50. In ΔABC, a line DE intersects AB and AC such that $\frac{AD}{DB} = \frac{AE}{EC}$. Prove that DE || BC.

51. The median of the following data is 525. Find the value of x and y if total frequency is 100.

Class interval	0-100	100-200	200-300	300-400	400-500	500-600	600-700	700-800	800-900	900-1000
Frequency	2	5	x	12	17	20	y	9	7	4

52. A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears,
(i) a two digit number
(ii) a perfect square number
(iii) a number divisible by 5.

53. If the median of the distribution given below 28.5, find the values of P and Q.

Weight in (kg)	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	Total
No. of students	5	P	20	15	Q	5	60

54. One card is drawn from a well-shuffled deck of 52 card. Find the probability of getting

(i) a king of red colour.

(ii) not a spade.

(iii) the queen of hearts.