

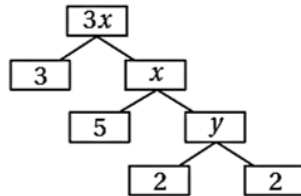


Section A

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

1. From the given factor tree, $x + y = \dots\dots\dots$

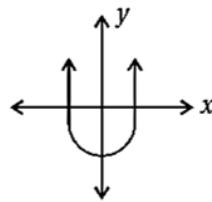
- (A) 4
- (B) 20
- (C) 24
- (D) 80



2. $HCF(12, 21) = \dots\dots\dots (1, 3, 7)$

3. For the given figure, if $y = p(x)$, then number of zeroes are $\dots\dots\dots$

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



4. $\dots\dots$ is the cubic polynomial for $a = -3, b = 5, c = 7$ and $d = 1$.

- (A) $-3x^3 + 5x^2 - 7x - 1$
- (B) $-3x^3 + 5x^2 + 7x + 1$
- (C) $x^3 - 5x^2 + 7x + 1$
- (D) $-3x^3 - 5x^2 + 7x + 1$

5. If the graph of the equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ is two parallel lines then out of the following which is true $\dots\dots\dots$

- (A) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$
- (B) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$
- (C) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$
- (D) None of these

6. The probability that 'A sun rise in the west' is $\dots\dots (0, 1, \text{can't be said})$

7. If $\bar{x} = 6.45, \Sigma f_i = 100, \Sigma f_i x_i = \dots\dots\dots (645, 6.45, 64.5)$

8. $\cot^2\beta + 1 = \text{cosec}^2\beta$.

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

10. Median = $3 \times \text{mode} - 2 \times \text{mean}$

11. \bar{A} is complement event of A. If $P(A) - P(\bar{A}) = 0.8$ then find $P(A)$.

12. Mean = 25 and mode = 25 then median = $\dots\dots\dots$

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

13. The curved surface area of the sphere is $\dots\dots\dots$

- (A) $2\pi rh$
- (B) $2\pi r^2$
- (C) $4\pi r^2$
- (D) $\frac{1}{3}\pi r^2 h$

14. Write the standard form of a linear equations in two variables.

15. The distance of the point $P(x, y)$ from the origin is $\dots\dots\dots$

- (A) $x^2 + y^2$
- (B) $\sqrt{x^2 + y^2}$
- (C) $x + y$
- (D) None

16. When $\theta = \dots\dots\dots$ then $\sin 2\theta = 2\sin\theta$ is true.

- (A) 60°
- (B) 0°
- (C) 30°
- (D) 45°

17. State the formula to find the total surface area of 5 rupees coin.

18. Length of minor arc is $\left(\frac{\pi r \theta}{180}, \frac{\pi r^2 \theta}{360}, \frac{\theta}{360} \right)$
19. Formula to find area of circle is
 (A) $\pi r l$ (B) $\frac{\pi r^2 \theta}{360^\circ}$ (C) πr^2 (D) $2\pi r$
20. True or False : The perpendicular at a point of contact to the tangent to a circle passes through the centre.
21. The tangent of a circle touches it at point / points. (one, two, three)
22. Match the following with correct alternative :

Part-A	Part-B
The formula to find common difference is	(a) $a_{n+1} - a_n$ (b) $a_n - a_{n+1}$

23. Match the following with correct alternative :

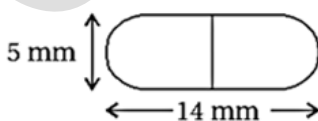
Part-A	Part-B
For an AP $a_{25} - a_{20} = 15$ then $d = \dots\dots\dots$	(a) 5 (b) 3

24. Is $(y + 1)^2 = 2(y - 3)$ is a quadratic equation or not ?

Section B

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

25. Find the roots by factorisation : $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$
26. Find 15th term of an AP 2, 7, 12,
27. Find zeroes of quadratic polynomial $p(x) = x^2 + 7x + 10$.
28. Find the value of y for which the distance between the points P(2, -3) and Q(10, y) is 10 units.
29. In an Arithmetic Progression $a = 5$, $d = 3$, $a_n = 50$ then find "n".
30. Find the distance between A(-5, 7) and B(-1, 3).
31. Prove that $\sqrt{\frac{1 + \sin A}{1 - \sin A}} = \sec A + \tan A$.
32. Evaluate : $2 \tan^2 45^\circ - \cos^2 30^\circ + \sin^2 60^\circ$
33. The angle of elevation of the top of the tower from a point on the ground, which is 30 m away from the foot of the tower is 30° . Find the height of the tower.
34. A medicine capsule is in the shape of a cylinder with two hemispheres stuck to each of its ends (see Fig.). The length of the entire capsule is 14 mm and the diameter of the capsule is 5 mm. Find its surface area.



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 survey was conducted by a group of students regarding the number of family members in 20 families. Find mode of the following data.

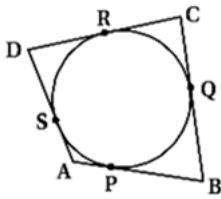
No. family members	1 - 3	3 - 5	5 - 7	7 - 9	9 - 11
No. families	7	8	2	2	1

37. Find a quadratic polynomial, the sum and product of whose zeroes are 9 and 14 respectively.

Section C

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

38. Solve the pair of equations : $2x + 3y = 7$, $3x - 4y = 2$ by elimination method.
39. Solve $2x + 3y = 11$ and $2x - 4y = -24$ and hence find the value of "m" for which $y = mx + 3$.
40. Which term of the AP 3, 15, 27, 39, will be 132 more than its 54th term.
41. The quadrilateral whose vertices are A(1, 0), B(7, 0), C(6, 3) and D(2, 3). Find it's area.
42. If the points A(6, 1), B(8, 2), C(9, 4) and D(P, 3) are the vertices of a parallelogram, taken in order. Find the value of 'P'.
43. The lengths of tangents drawn from an external point to a circle are equal.
44. A quadrilateral ABCD is drawn to circumscribe a circle (see figure). Prove that $AB + CD = AD + BC$.



45. 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

46. A dice is thrown once. Find the probability of getting
- a prime number;
 - a number lying between 2 and 6;
 - an odd number.

Section D

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

47. Is it possible to design a rectangular mango grove whose length is twice its breadth and the area is 3200 m² ? If so, find its length and breadth.
48. Write basic proportionality theorem (Thales theorem). If a line is drawn parallel to one side of a triangle intersecting the other two sides, then it divided the two sides in the same ratio.
49. In $\triangle ABC$, a line DE intersects AB and AC such that $\frac{AD}{DB} = \frac{AE}{EC}$. Prove that $DE \parallel BC$.

50. 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

51. Find the sum of first 51 terms of an AP whose second and third terms are 14 and 18 respectively.
52. The following distribution shows the daily pocket allowance of children of a locality. The mean pocket allowance is ₹ 18. Find the missing frequency f .

Daily pocket allowance (in ₹)	11 - 13	13 - 15	15 - 17	17 - 19	19 - 21	21 - 23	23 - 25
No. of children	7	6	f	13	20	5	4

53. A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 (see Figure), and these are equally likely outcomes. What is the probability that it

will point at

- (i) 8 ?
- (ii) an odd number ?
- (iii) a number greater than 2 ?
- (iv) a number less than 9 ?



54. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting
- (i) a king of red colour
 - (ii) a face card
 - (iii) a red face card
 - (iv) the jack of hearts
 - (v) a spade
 - (vi) the queen of diamonds