ಕರ್ನಾಟಕ ಶಾಲಾ ಪರೀಕ್ಷೆ ಮತ್ತು ಮೌಲ್ಯನಿರ್ಣಯ ಮಂಡಲಿ
ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು – 560 003

KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD
Malleshwaram, Bengaluru – 560 003

2024-25ರ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ-3
S.S.L.C. MODEL QUESTION PAPER-3 – 2024-25

ವಿಷಯ : ಗಣಿತ

Subject : MATHEMATICS

(ಆಂಗ್ಲ ಮಾಧ್ಯಮ / English Medium)

ವಿಷಯ ಸಂಕೇತ : 81-E **Subject Code : 81-E**

ಸಮಯ : 3 ಗಂಟೆ 15 ನಿಮಿಷಗಳು] [Time : 3 Hours 15 Minutes

ಗರಿಷ್ಠ ಅಂಕಗಳು : **80**] [Max. Marks : **80**

General Instructions to the Candidate :

1. This question paper consists of 38 questions.

2. Follow the instructions given against the questions.

3. Figures in the right hand margin indicate maximum marks for the questions.

4. The maximum time to answer the paper is given at the top of the question paper.

   It includes 15 minutes for reading the question paper.

I. ***Four*** **alternatives are given for each of the following questions / incomplete statements. Choose the correct alternative and write the complete answer along with its letter of alphabet.** **8 × 1 = 8**

1. The product of prime factors of 90 is

(A) 9×10 (B) 6×15

(C) $2 \times 3 \times 3 \times 5$ (D) $1 \times 2 \times 3 \times 15$

2. If the lines represented by the linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are parallel lines then

(A) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (B) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

(C) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ (D) $\frac{a_1}{a_2} = \frac{b_2}{b_1}$

3. If the graph of a quadratic polynomial passes through the coordinate points $(-3, 0)$, $(-1, -5)$, $(0, -6)$ and $(2, 0)$ then the zeroes of the quadratic polynomial are

(A) -3 and -6 (B) 0 and -3

(C) -1 and -5 (D) -3 and 2

4. In an A.P. if $a_n = 2n - 1$ then the common difference is

(A) 2 (B) -2

(C) 3 (D) -1

5. The coordinates of the midpoint of the line segment joining the points $(-4, 2)$ and $(-2, 6)$ are

(A) $(3, 2)$ (B) $(-3, 4)$

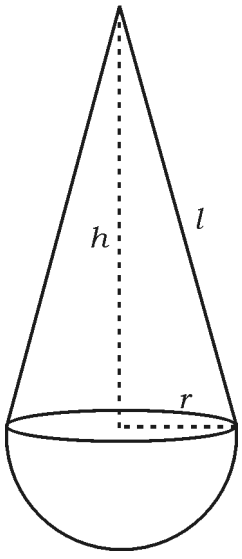
(C) $(-2, 3)$ (D) $(-4, 1)$

6. If $\tan\theta = 1$ then value of $\sec\theta$ is

(A) $\frac{1}{\sqrt{3}}$ (B) 3

(C) $\sqrt{2}$ (D) $\frac{1}{\sqrt{2}}$

7. In the figure, A toy is made up of a cone mounted on a hemisphere as shown in the figure. Then the formula to find out the volume of the toy is



(A) $\pi r^3 + \pi rl$ (B) $3\pi r^2 + \pi r^2 h$

(C) $\frac{1}{3}\pi r^2 h + \frac{2}{3}\pi r^3$ (D) $\pi r^2 h + \frac{2}{3}\pi r^3$

8. If the probability of losing a game of a kabaddi team is 0·25 then the probability of winning in the same game is

(A) 0·95 (B) 0·75

(C) 9·75 (D) 0·70

II. Answer the following questions : **8 × 1 = 8**

9. Write the H.C.F. of 7 and 12.

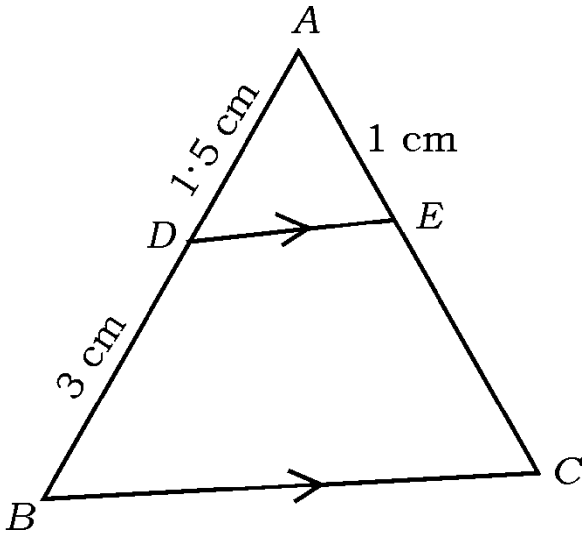
10. Write the general form of a quadratic polynomial where *a, b* and *c* are real numbers and *'x'* is a variable.

11. Write the formula to find the area of a quadrant of a circle.

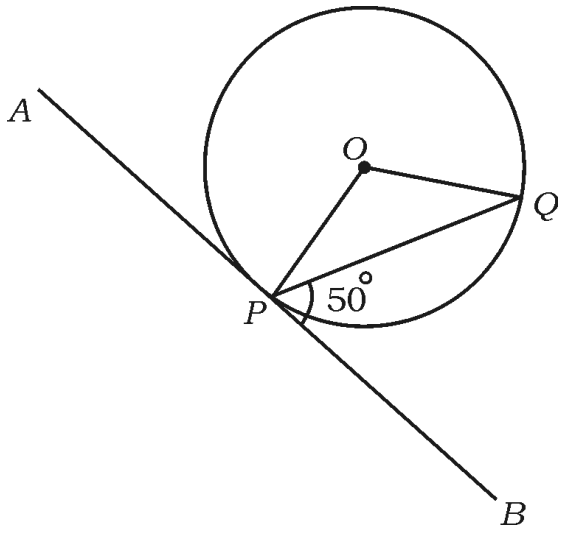
12. Write the formula to find the volume of a cylinder whose radius is *'r'* and height is *'h'*.

13. What does *'l'* represent in the formula, Median = $l + \left[\frac{\frac{n}{2} - cf}{f} \right] \times h$.

14. In the following figure, *ABC* is a triangle in which *DE* || *BC*, *AD* = 1·5 cm, *BD* = 3 cm, *AE* = 1 cm ; then find the value of *EC*.



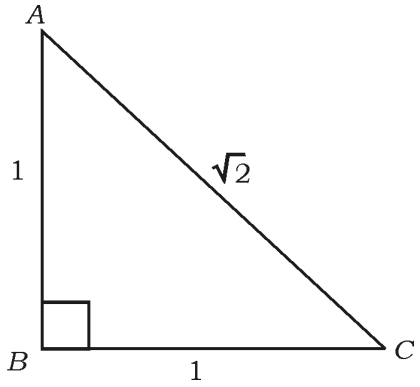
15. In the following figure, *'O'* is the centre of circle and *AB* is tangent at *P*. If $\angle BPQ = 50°$, find the value of $\angle POQ$ is



16. Find the class mark in the class interval 10 – 25.

III. Answer the following questions : **8 × 2 = 16**

17. In the given figure, find the value of cos *A* and cosec *C*.



18. Solve :

$2x + y = 8$

$3x - y = 7$

19. Find how many two digit numbers are divisible by 5 using formula.

OR

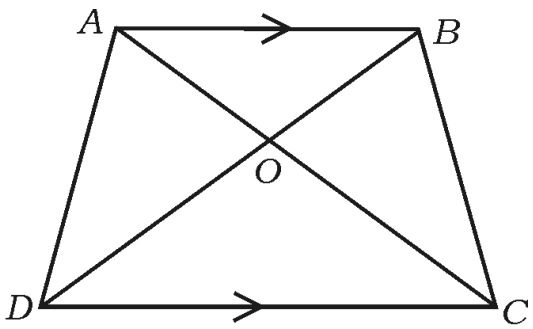
An arithmetic progression consists of 20 terms whose first and last terms are 12 and 106 respectively. Find the sum of the progression.

20. Solve $x - \frac{3}{x} = 2$

21. Find the coordinates of the point which divides the join of (1, 6) and (4, 3) in the ratio 1 : 2.

22. A bag contains some cards of consecutive natural numbers from 1. If the probability of drawing an even natural number card is $\frac{4}{9}$ then find the probability of getting a prime number card.

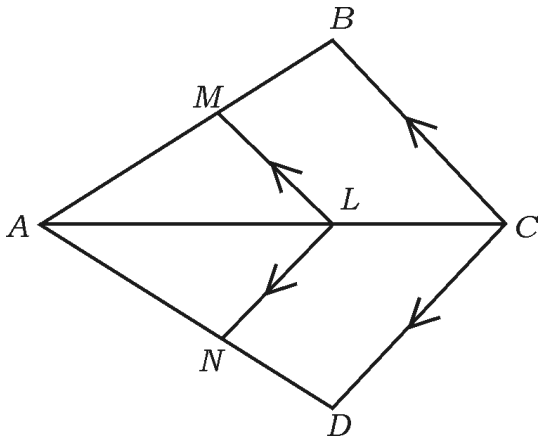
23. In the given figure *ABCD* is a trapezium in which $AB \parallel DC$ and its diagonals intersect each other at *'O'*. Show that $\frac{AO}{BO} = \frac{CO}{DO}$.



OR

In the given figure $LM \parallel CB$ and $LN \parallel CD$. Prove that

$\frac{AM}{AB} = \frac{AN}{AD}$.



24. Find the value of the discriminant of the quadratic equation

$3x^2 - 7x + 4 = 0$ and also write the nature of the roots.

IV. Answer the following questions : **9 × 3 = 27**

25. Prove that $\sqrt{5}$ is an irrational number.

26. If the zeroes of a quadratic polynomial are – 3 and 4 respectively then find the quadratic polynomial and also verify the relationship between zeroes and the coefficients.

OR

α and β are the zeroes of a quadratic polynomial. If $\alpha + \beta = -3$ and $\alpha\beta = 2$ then find the quadratic polynomial and also find the value of $(\alpha - \beta)$.

27. Find the value of $\dfrac{5\cos^2 60^\circ + 4\sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$.

OR

Prove that $\dfrac{1 + \sec A}{\sec A} = \dfrac{\sin^2 A}{1 - \cos A}$.

28. Find the area of the rhombus *ABCD* whose coordinates of the vertices are *A* (2, 4), *C* (8, 12) and length of *BD* is 5 units.

29. Find the mean of the following data :

Class interval	5–15	15–25	25–35	35–45	45–55	55–66
Frequency	6	11	21	23	14	5

OR

Find the mode of the following data :

Class interval	0–20	20–40	40–60	60–80	80–100	100–120
Frequency	10	35	52	61	38	29

30. If D is a point on the side BC of a triangle ABC, such that $\angle ADC = \angle BAC$, show that $CA^2 = CB \cdot CD$.

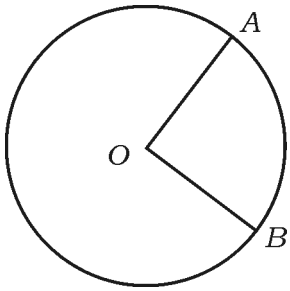
31. Prove that "The lengths of tangents drawn from an external point to a circle are equal".

32. Age of father is 30 years more than his son. After 5 years, the product of their ages is 400. Find the present ages of both the son and father.

OR

The first number is 3 more than second number. The sum of their squares is 29. Find the numbers.

33. In the figure *'O'* is the centre of the circle. Area of a sector *AOB* : Area of the circle = 1 : 5 and if the radius of the circle is 7 cm then find the length of the arc *AB*.



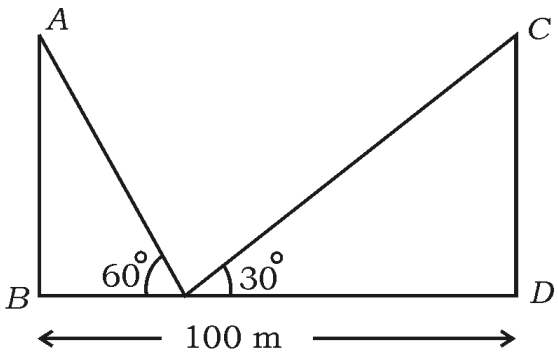
V. Answer the following questions : **4 × 4 = 16**

34. Solve the following pair of linear equations in two variables by graphical method :

$x + 2y = 8$

$x + y = 5$

35. Two poles of equal heights are standing vertically on a horizontal ground as shown in the figure. Wires are tied from top of the poles to a peg on the ground. The angles of elevations to the top of the poles are found to be 30° and 60°. If the distance between the feet of poles is 100 m, find the height of the poles and the length of wires.



36. Prove that, if in two triangles sides of one triangle are proportional to the sides of the other triangle, then their corresponding angles are equal and hence the two triangles are similar.

37. A sphere of volume 38808 cm^3 is divided into two equal parts. Find the total surface area of each hemisphere.

OR

A toy is made up of a cylinder having diameter 10 cm and height 20 cm and it is joined with a hemisphere of same diameter at one end and a cone of equal diameter and slant height 13 cm at the other end. Find the surface area of the toy.

VI. Answer the following question : 1 × 5 = 5

38. If the sum of *'n'* terms of an A.P. is $5n - n^2$ then write the arithmetic progression. Also find the 21st term and sum of the first 21 terms of the progression.