

KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD

Malleshwaram, Bengaluru – 560003

S.S.L.C. MODEL QUESTION PAPER – 01 – 2025-26

Subject: MATHEMATICS
(English Medium)

Subject Code: 81 – E

[Time: 3 Hours 15 Minutes]

[Max. Marks: 80]

General Instructions to the candidate:

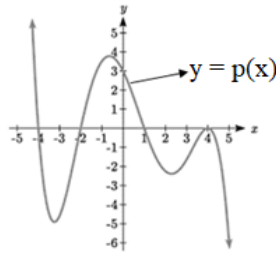
1. This question paper consists of 38 questions.
2. Follow the instructions given against the questions.
3. Figures in the right hand margin indicate maximum marks for the questions.
4. The maximum time to answer the paper is given at the top of the question paper.
It includes 15 minutes for reading 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. $8 \times 1 = 8$

1. The H.C.F of 3 and 5 is,

- (A) 1 (B) 3
(C) 5 (D) 15

2. In the figure, the number of zeroes of the polynomial $y = p(x)$ is,



- (A) 3 (B) 5
(C) 4 (D) 1

3. If the pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ have unique solution, then the correct relation among the following is,

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

4. The arithmetic progression in the following is,

(A) 1, 2, 4, 8.....

(B) 3, 7, 10, 14.....

(C) 1, 4, 9, 16.....

(D) 5, 9, 13, 17.....

5. In the given frequency distribution table the median class is,

Marks	Number of Students	Cumulative Frequency
0- 10	3	3
10 - 20	4	7
20 - 30	7	14
30 - 40	6	20
	n = 20	

(A) 0 - 10

(B) 10 - 20

(C) 20 - 30

(D) 30 - 40

6. If $\cot A = 3 \tan A$, then the measure of the angle A is,

(A) 90°

(B) 60°

(C) 45°

(D) 30°

7. A perpendicular drawn from a point $P (-4, -5)$ intersects X- axis at the point Q.
The coordinates of point Q are,

(A) (0, - 4)

(B) (-4, 0)

(C) (-5, 0)

(D) (0, -5)

8. The quadratic equation whose roots are 6 and -1 is

(A) $x^2 + 5x - 6 = 0$

(B) $x^2 - 5x - 6 = 0$

(C) $x^2 - 5x + 6 = 0$

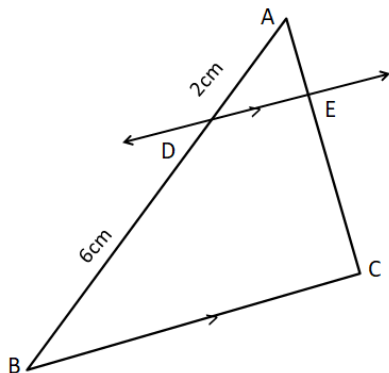
(D) $x^2 + 5x + 6 = 0$

II. Answer the following questions:

$8 \times 1 = 8$

9. How many solutions does the pair of linear equations in two variables have if they are inconsistent?

10. In the figure, if $DE \parallel BC$, $AD = 2\text{cm}$ and $BD = 6\text{cm}$, then find $DE:BC$.

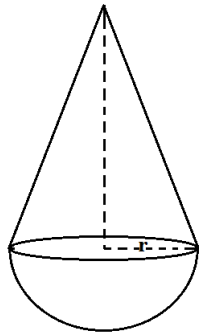


11. The circumference of the base of a cylinder is 10cm and its height is 25cm. Find its curved surface area.

12. Write the value of $P(E) + P(\overline{E})$ with reference to probability.

13. In an arithmetic progression, the seventh term is 12 more than its fourth term. Find the common difference.

14. In the figure a cone with radius 'r' and slant height 'l' is mounted on a hemisphere with radius 'r'. Write the formula to find the total surface area of the solid formed.



15. $\triangle ABC \sim \triangle PQR$. BC and QR are corresponding sides. If $\angle B = 80^\circ$ and $\angle C = 40^\circ$, then what is the measure of $\angle P$?
16. If the zeroes of the polynomial $p(x) = x^2 + 3x + k$ are reciprocal to each other, then find the value of k.

III. Answer the following questions:

8 x 2 = 16

17. In an arithmetic progression, if $S_{20} = 820$ and $a_{20} = 79$, then find its first term.

OR

How many numbers between 201 and 401 are divisible by 6?

18. Solve the given pair of linear equations using suitable method.

$$2x + y = 8$$

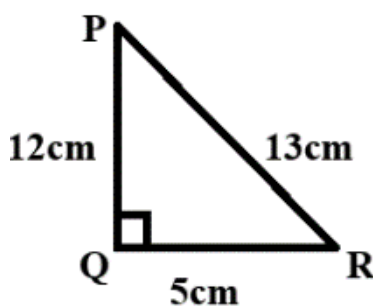
$$3x - y = 7$$

19. Find the discriminant of the quadratic equation $2x^2 + 3x - 7 = 0$ and determine the nature of roots.

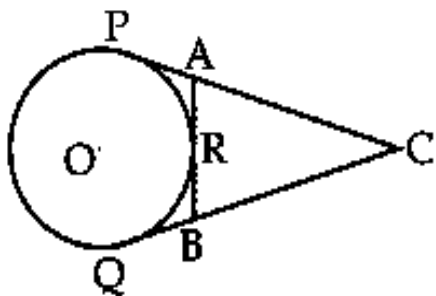
OR

Express the quadratic equation $(2x + 3)x = x^2 + 1$ in the standard form.

20. Prove that $\sqrt{5}$ is an irrational number.
21. Find the coordinates of the point which divides the line segment joining the points $(1, 6)$ and $(4, 3)$ in the ratio $1:2$ internally.
22. In the figure, find the value of $\tan P$ and $\cos R$.



23. In the figure, CP and CQ are tangents to the circle with centre O. ARB is another tangent at R. Show that the perimeter of triangle CAB is twice the length of tangent CP.



24. The product of HCF and LCM of 2 numbers is 2016. If one of the numbers is 42, then find the other number. Also find the HCF of those two numbers by prime factorization method.

IV. Answer the following questions:

$$9 \times 3 = 27$$

25. Find the coordinates of the centre of a circle passing through the points A(−3, 0), B(0, 2) and C(0, −3).
26. Prove that “the length of tangents drawn to a circle from an external point are equal”.
27. An express train takes 1 hour less than a passenger train to travel a distance of 132 km. The Average speed of the express train is 11km/h more than that of the passenger train. Find the average speed of these two trains.

OR

The ages of two students ‘A’ and ‘B’ are 19 years and 15 years respectively. Find how many years it will take so that the product of their ages become equal to 480.

28. Prove that: $\sec A (1 - \sin A) (\sec A + \tan A) = \sqrt{(1 + \cos A)(1 - \cos A)} \cdot \operatorname{cosec} A$

OR

Prove that $\frac{\sin \theta}{1 - \cos \theta} + \frac{\tan \theta}{1 + \cos \theta} = \cot \theta + \sec \theta \cdot \operatorname{cosec} \theta$

29. Write the quadratic polynomial whose sum and product of the zeroes are 2 and −8 respectively and hence find the zeroes of the polynomial.

OR

If α and β are the zeroes of the quadratic polynomial $p(x) = x^2 + 3x + 1$ then,

find the value of (i) $\frac{1}{\alpha} + \frac{1}{\beta}$

(ii) $\alpha^2 \beta + \alpha \beta^2$

30. ABC is a right angled triangle. If $\angle BAC = 90^\circ$ and $AD \perp BC$, then show that $AB^2 = BC \times BD$

31. The minute hand of a wall clock is 18cm long. Find the area swept by the minute hand in 35 minutes. Find the length of the arc formed by the sweep of the minute hand.

32. A box contains cards numbered from 6 to 70. If one card is drawn at random from the box, then find the probability that the card will have

(i) a perfect square number.

(ii) a number divisible by 5.

(iii) an odd number less than 30.

33. Find the Mean for the following frequency distribution table.

Class interval	Frequency
0 – 10	4
10 – 20	9
20 – 30	15
30 – 40	14
40 – 50	8

OR

Find the Mode for the following frequency distribution table.

Class interval	Frequency
15-20	6
20-25	9
25-30	15
30-35	9
35-40	1

V. Answer the following questions:

4 x 4 = 16

34. Solve the given pair of linear equations by graphical method.

$$x + 2y = 6$$

$$x + y = 5$$

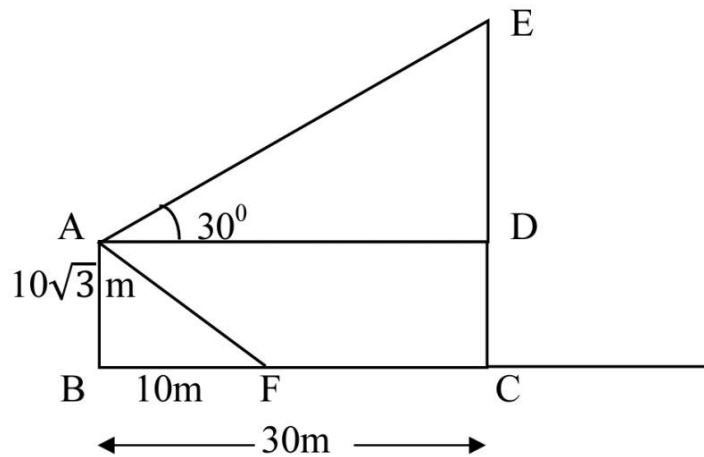
35. Prove that “If in two triangles, sides of one triangle are proportional to (i.e., in the same ratio of) the sides of the other triangle, then their corresponding angles are equal and hence the two triangles are similar.”

OR

Prove that “If one angle of a triangle is equal to one angle of the other triangle and the sides including these angles are proportional, then the two triangles are similar”.

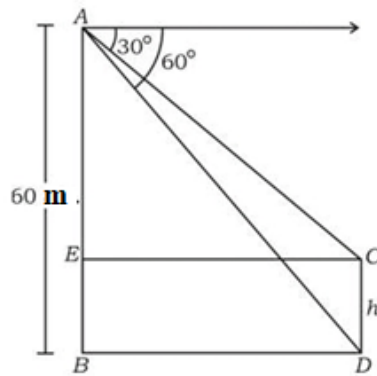
36. The sum of first ‘n’ terms of an arithmetic progression is $S_n = 3n^2 + 2n$. Find the n^{th} term of the progression. If this progression consists of 59 terms then find the sum of last 10 terms of the progression.

37. The lighthouse [AB] of height $10\sqrt{3}$ m stands vertically on a sea shore. A tower [CE] and a ship [F] are standing 30m and 10m away from the foot of the lighthouse respectively. The angle of elevation of the top of the tower from the top of the lighthouse is 30° . Find the height of the tower and distance between the top of the lighthouse to the top of the tower [AE]. Also find the angle of depression formed from the top of the lighthouse to the ship.



OR

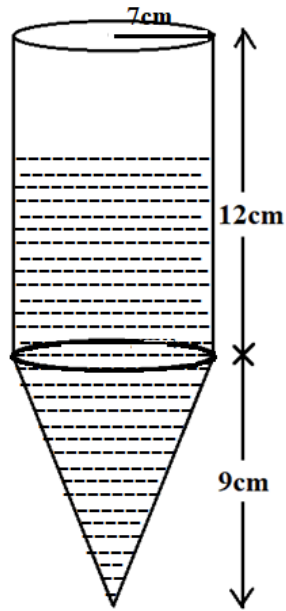
A tower and a pole stand vertically on the same level ground. It is observed that the angles of depression of the top and foot of the pole from the top of tower of height 60m is 30° and 60° respectively. Find the height of the pole.



VI. Answer the following question:

1 x 5 = 5

38. A hollow solid is made by placing a cylinder on an inverted cone as shown in the figure. The radius of the cylinder and the cone are 7cm and their heights are 12cm and 9cm respectively. The solid is filled with water up to the height of $\frac{2}{3}$ rd the height of the cylinder. Find the amount of water in the solid. Calculate the amount of water required to fill the solid completely.



OR

A vessel is in the form of an inverted cone. Its height is 8cm and the radius is 5cm. The vessel is filled with water up to the brim and when 100 lead shots of same size are dropped in it, $\frac{1}{4}$ th of the water from the vessel flows out. Find the radius and volume of each lead shot.

