

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

KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD
Mallechwaram, Bengaluru - 560 003

2023-24ರ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ
S.S.L.C. MODEL QUESTION PAPER - 2023-24

ವಿಷಯ : ಗಣಿತ

Subject : MATHEMATICS

(ಆಂಗ್ಲ ಮಾಧ್ಯಮ / English Medium)

ಸಮಯ : 3 ಗಂಟೆ 15 ನಿಮಿಷಗಳು]

ವಿಷಯ ಸಂಕೇತ : **81-E**

ಗರಿಷ್ಠ ಅಂಕಗಳು : 80]

Subject Code : 81-E

CCE-RF : ಶಾಲಾ ವಿದ್ಯಾರ್ಥಿಗಳು / Regular Fresh

General Instructions to the Candidate :

1. This question paper consists of 38 questions.
2. Question paper has been sealed by reverse jacket. You have to cut on the right side to open the paper at the time of commencement of the examination. Check whether all the pages of the question paper are intact.
3. Follow the instructions given against the questions.
4. Figures in the right hand margin indicate maximum marks for the questions.
5. 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.

[Turn over

81-E

2

CCE RF

- 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. Every positive odd integer is of the form (where q is a positive integer)

(A) $2q + 1$

(B) $2q + 2$

(C) $2q + 4$

(D) $2q$

2. The lines represented by the pair of linear equations $x + 2y = 8$ and $2x + 4y = 10$ are

(A) intersecting each other

(B) perpendicular to each other

(C) coincident

(D) parallel to each other

81-E

3

CCE RF

3. The n^{th} term (a_n) of the Arithmetic progression whose first term is 'a' and common difference 'd' is

(A) $a_n = a + (n + 1) d$

(B) $a_n = \frac{n}{2} [a + (n - 1) d]$

(C) $a_n = a + (n - 1) d$

(D) $a_n = a (n - 1) d$

4. Sum of the zeroes of the polynomial $p(x) = x^2 - 2x - 8$ is

(A) -8 (B) 2

(C) -2 (D) 8

5. If $\tan \theta = 1$, then the value of $\sec \theta$ is

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

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

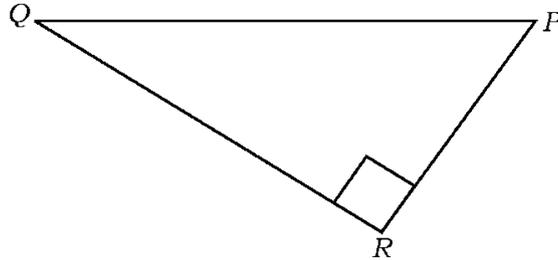
[Turn over

81-E

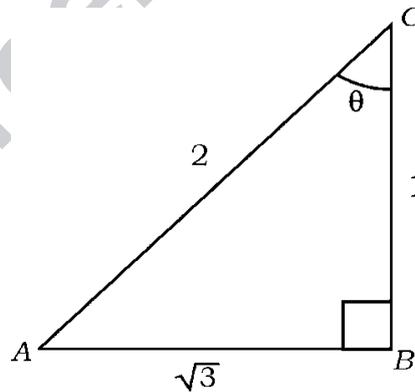
4

CCE RF

6. The correct relation related to the ΔPQR given in the figure is



- (A) $PQ^2 = PR^2 + QR^2$ (B) $PR^2 = PQ^2 + QR^2$
 (C) $QR^2 = PR^2 + PQ^2$ (D) $PQ^2 = PR^2 - QR^2$
7. The volume of a cone having radius ' r ' and height ' h ' is
- (A) $\pi r^2 h$ (B) $2 \pi r h$
 (C) $\frac{2}{3} \pi r^2 h$ (D) $\frac{1}{3} \pi r^2 h$
8. In ΔABC , if $AB = \sqrt{3}$ units, $BC = 1$ unit, $AC = 2$ units and $\angle ACB = \theta$, then the value of ' θ ' is



- (A) 0° (B) 60°
 (C) 45° (D) 90°

81-E

5

CCE RF

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

9. The HCF and LCM of two numbers are 4 and 60 respectively. If one of the numbers is 12, then find the other number.

10. Write the degree of the polynomial

$$g(p) = 7p^4 - 2p^3 + 3p^2 + p - 3$$

11. Find the 5th term of the Arithmetic progression 3, 1, -1,

12. Express the quadratic equation $2x = 3x^2 - 5$ in the standard form.

13. If $\sin A = \frac{1}{2}$, $\cos A = \frac{\sqrt{3}}{2}$, then find the value of $\tan A$.

14. A fair coin is tossed once. Find the probability of getting Head.

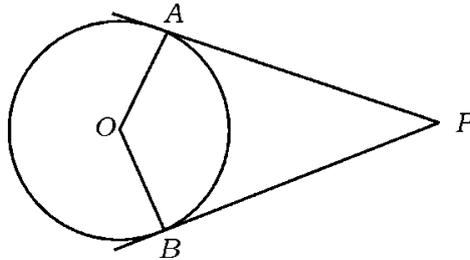
[Turn over

81-E

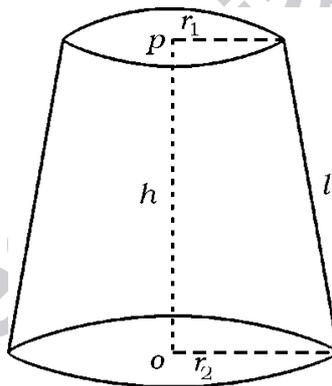
6

CCE RF

15. In the given figure, if $\angle AOB = 2\angle APB$, then find the value of $\angle APB$.



16. Write the formula to find the curved surface area of the frustum of a cone given in the figure.



III. Answer the following questions :

8 × 2 = 16

17. Prove that $2 + \sqrt{3}$ is irrational.

OR

Find the HCF of 64 and 332 by using Euclid's division algorithm.

81-E

7

CCE RF

18. Solve by elimination method :

$$2x + 3y = 14$$

$$2x + y = 10$$

19. Find the sum of first 30 terms of the Arithmetic progression

3, 7, 11, using formula.

20. Find the roots of the equation $x^2 - 7x + 12 = 0$ using quadratic formula.

21. Prove that $\sin 30^\circ + \cos 60^\circ + \tan 45^\circ = \sec 60^\circ$.

OR

Prove that $\frac{\cos A}{1 + \sin A} + \frac{1 + \sin A}{\cos A} = 2 \sec A$.

22. Find the coordinates of the point which divides the line segment joining the points (2, 1) and (7, 6) in the ratio 3 : 2.

[Turn over

81-E

8

CCE RF

23. A box contains tokens which are numbered from 1 to 15. A token is drawn at random from the box. Find the probability that the token does not bear a prime number.

24. Draw a pair of tangents to the circle of radius 4 cm which are inclined to each other at an angle of 60° .

IV. Answer the following questions :

9 × 3 = 27

25. Divide $p(x) = x^4 - 3x^2 + 4x + 5$ by $g(x) = x^2 - 1$ and find the quotient $[q(x)]$ and remainder $[r(x)]$.

OR

On dividing $x^3 - 3x^2 + x + 2$ by a polynomial $g(x)$ the quotient and remainder are $(x - 2)$ and $(-2x + 4)$ respectively. Find $g(x)$.

26. The diagonal of a rectangular field is 20 m more than the shorter side of it. If the shorter side is 10 m less than the longer side, then find the sides of the rectangular field.

81-E

9

CCE RF

27. Find the area of a triangle PQR whose vertices are $P(1, 6)$, $Q(3, 2)$ and $R(10, 8)$.

OR

ABC is a triangle whose vertices are $A(1, 4)$, $B(-2, -2)$, $C(4, -2)$. If AD is median to BC , then find the length of AD .

28. Find the mean for the distribution given below :

<i>Class-interval</i>	<i>Frequency</i>
0 – 10	4
10 – 20	6
20 – 30	17
30 – 40	13
40 – 50	7
50 – 60	3

OR

[Turn over

81-E

10

CCE RF

Find the mode for the following data :

<i>Class-interval</i>	<i>Frequency</i>
1 – 5	1
5 – 10	2
10 – 15	13
15 – 20	15
20 – 25	7
25 – 30	2

29. The following table gives production yield per hectare of paddy of 100 farms of a village. Draw a 'more than type ogive' for the given data :

<i>Production yield (In kg/hectare)</i>	<i>Number of farms (cumulative frequency)</i>
50 or more than 50	100
55 or more than 55	98
60 or more than 60	90
65 or more than 65	77
70 or more than 70	49
75 or more than 75	15

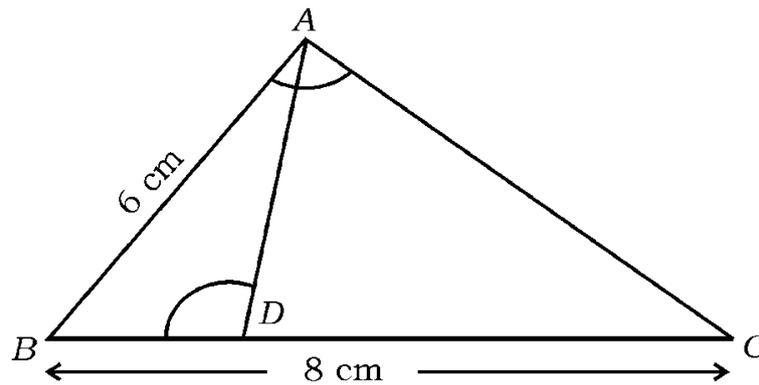
81-E

11

CCE RF

30. In the figure $\angle BAC = \angle ADB$, $BC = 8$ cm and $AB = 6$ cm.

Prove that $\frac{\text{Area of } \triangle ABC}{\text{Area of } \triangle ABD} = \frac{16}{9}$.



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

32. Construct a triangle with sides 5 cm, 6 cm and 9 cm and then construct another triangle whose sides are $\frac{2}{3}$ of the corresponding sides of the first triangle.

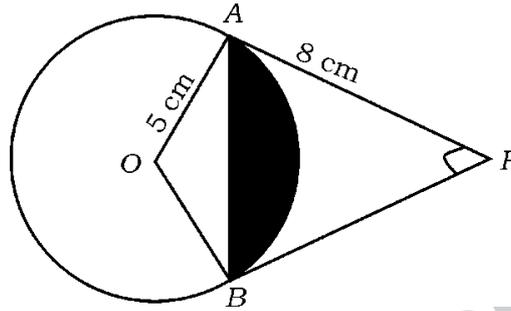
[Turn over

81-E

12

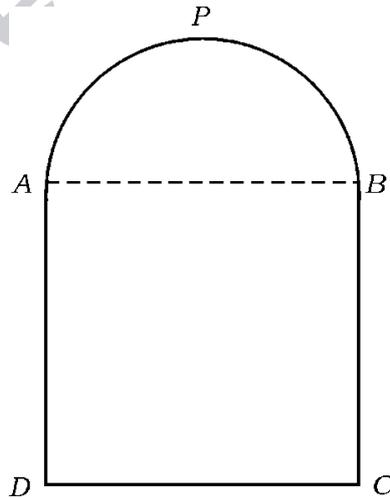
CCE RF

33. In the figure, 'O' is the centre of the circle of radius 5 cm and APB is an equilateral triangle of side 8 cm. AP and BP are tangents. Find the area of the shaded region.



OR

$ABCD$ is a rectangle and APB is a semicircle as shown in the figure. The length (BC) of the rectangle is 3 times the radius of the semicircle and the total area of the figure $APBCDA$ is 371 cm^2 , then find the length of the semicircular arc.



81-E

13

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

34. Find the solutions of the given pair of linear equations by graphical method :

$$x + y = 4$$

$$2x + y = 7$$

35. There are 20 terms in an Arithmetic progression. The sum of the first term and 6th term of the progression is zero. The 4th and 5th terms of the progression are 2 and 6 respectively. Find the Arithmetic progression and also find which term of the progression is 62.

36. A man standing at the point 'A' on the building (AD) observes a car at point 'C' on a straight road from the foot of the building.

The car moves 500 m towards the building and reaches the point

'B', now he observes the car from point 'A'. The angles of

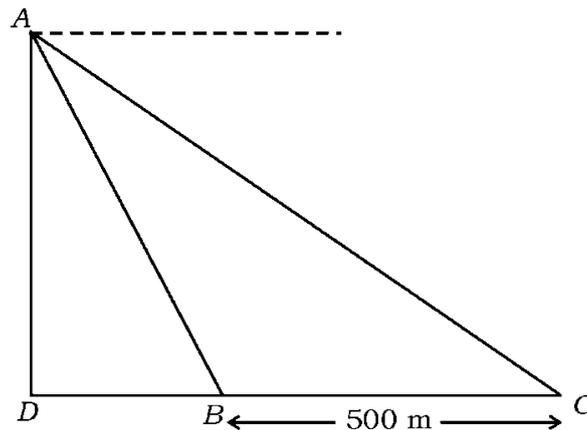
[Turn over

81-E

14

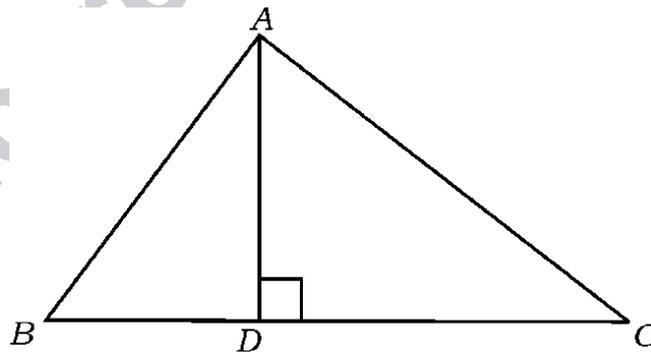
CCE RF

depression in these cases are complementary to each other. If the car takes 9 minutes to reach from point 'C' to point 'D' at the speed of 100 m/minute, then find the height of the building.



OR

In $\triangle ABC$, $AD \perp BC$. If $\angle ABC = 60^\circ$, $\angle ACB = 30^\circ$ and $BC = 36$ cm, then find measures of AB , AC and AD .



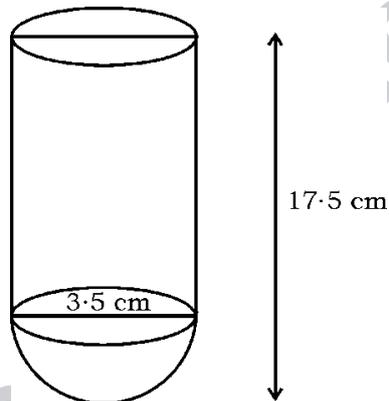
37. Prove "Basic proportionality theorem." (Thale's theorem).

81-E

15

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

38. A test tube is made up of a cylinder and a hemisphere as shown in the figure. If the diameter of the hemisphere is 3.5 cm and the total height of the test tube is 17.5 cm, then find the curved surface area of the test tube and the quantity of the solution that could be completely filled in the hemispherical part.



81-E

16

CCE RF

DO NOT WRITE ANYTHING HERE
www.careerindia.com