ಜುಲೈ 2024-2025 ರ ಪರೀಕ್ಷೆ-3

JULY 2024-2025 EXAMINATION-3

[ಒಟ್ಟು ಮುದ್ರಿತ ಪುಟಗಳ ಸಂಖ್ಯೆ : 16

[Total No. of Printed Pages : 16

[ಒಟ್ಟು ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ : 38

[Total No. of Questions : 38

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CCE RR/PR/PF

ಸಂಕೇತ ಸಂಖ್ಯೆ : **81-E**

Code No. : 81-E

ವಿಷಯ : ಗಣಿತ

Subject : MATHEMATICS

(ಆಂಗ್ಲ ಮಾಧ್ಯಮ / English Medium)

(ಶಾಲಾ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ / ಖಾಸಗಿ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ / ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ)

(Regular Repeater / Private Repeater / Private Fresh)

ದಿನಾಂಕ : 09. 07. 2025] [Date : 09. 07. 2025

ಸಮಯ : ಬೆಳಗ್ಗೆ 10-00 ರಿಂದ ಮಧ್ಯಾಹ್ನ 1-15 ರವರೆಗೆ] [Time : 10-00 A.M. to 1-15 P.M.

ಗರಿಷ್ಠ ಅಂಕಗಳು : 80] [Max. Marks : 80

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General Instructions to the Candidate :

1. This question paper consists of 38 questions.
2. This 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 ***(Follow the arrow mark)***. **Do not cut the left side to open the paper.** 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.
6. Ensure that the Version of the question paper distributed to you and the Version printed on your admission ticket is the same.

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TEAR HERE TO OPEN THE QUESTION PAPER WITH REVERSE JACKET
ಹಿಮ್ಮುಖ ಜಾಕೆಟ್ ಹೊಂದಿರುವ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ತೆರೆಯಲು ಇಲ್ಲಿ ಕತ್ತರಿಸಿ

MATHS. - A

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MRSA

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 degree of the polynomial $p(x) = x^3 - 7x^2 + 5x + 1$ is

(A) 1 (B) 2

(C) 3 (D) 0

2. The roots of the equation $(x + 2)(x - 3) = 0$ are

(A) -2 and -3 (B) -2 and 3

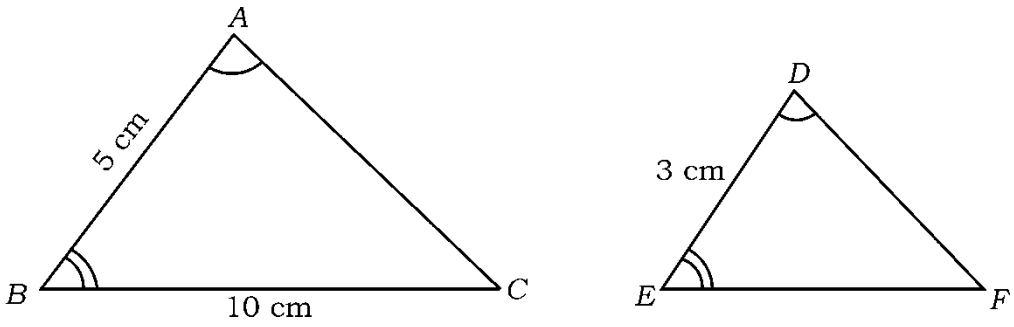
(C) 2 and 3 (D) 2 and -3

3. The formula to find the sum of first '*n*' natural numbers is

(A) $S_n = \frac{n}{2}$ (B) $S_n = n(n + 1)$

(C) $S_n = n^2$ (D) $S_n = \frac{n(n+1)}{2}$

4. In the figure, $\Delta ABC \sim \Delta DEF$. If AB = 5 cm, BC = 10 cm, DE = 3 cm then value of EF is



(A) 6 cm (B) 4 cm

(C) 7 cm (D) 5 cm

5. If $\sec A = \frac{2}{\sqrt{3}}$ then the value of $\cos A$ is

(A) 2 (B) $\frac{2}{\sqrt{3}}$

(C) $\sqrt{3}$ (D) $\frac{\sqrt{3}}{2}$

6. The formula to find the total surface area of a solid hemisphere of radius '*r*' is

(A) πr^2 (B) $2\pi r^2$

(C) $3\pi r^2$ (D) $4\pi r^2$

7. Diagonals of a parallelogram bisect each other at the point (2, – 3). If the coordinates of the point of one end of a diagonal are (1, 4) then the coordinates of the point of the other end of the same diagonal are

(A) (3, 10) (B) (3, – 10)

(C) (– 3, 10) (D) (– 3, – 10)

8. If $P(E) = 0{\cdot}05$, then the probability of 'not *E*' is

(A) 0·95 (B) 0·05

(C) 1 (D) 0·9

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

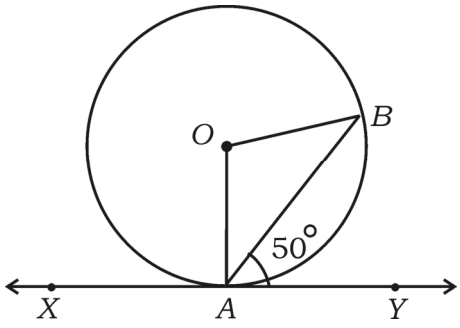
9. How many solutions does the pair of linear equations $3x + 5y + 8 = 0$ and $6x + 10y + 16 = 0$ have ?

10. Find the zeroes of the polynomial $p(x) = x^2 - 5$.

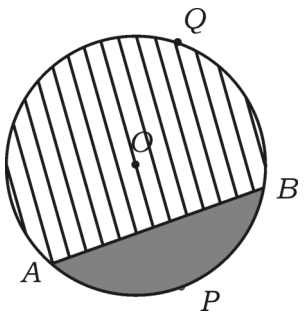
11. Write the quadratic equation $ax^2 + c = -bx$ in the standard form.

12. The n^{th} term of an arithmetic progression is $2n + 3$. Find the common difference of the progression.

13. In the given figure *'O'* is the centre of the circle and *XY* is a tangent drawn at the point *A*. If $\angle BAY = 50°$, then find the measure of $\angle OAB$.



14. In the given figure name the minor segment.



15. Write the formula to find the volume of a sphere having radius *'r'* units.

16. In an experiment of tossing a coin once, what is the probability of getting a 'head' ?

III. <u>Answer the following questions</u> : **8 × 2 = 16**

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

18. Solve the given pair of linear equations :

$2x + y = 6$

$x + y = 4$

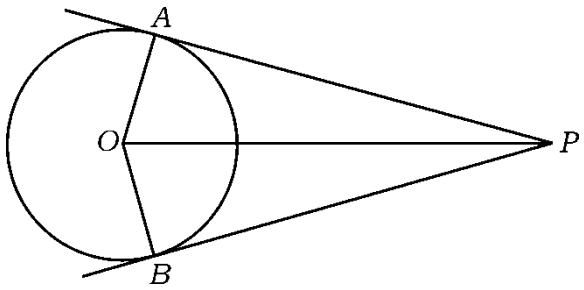
19. Find the roots of the quadratic equation $x^2 + 10x + 21 = 0$.

OR

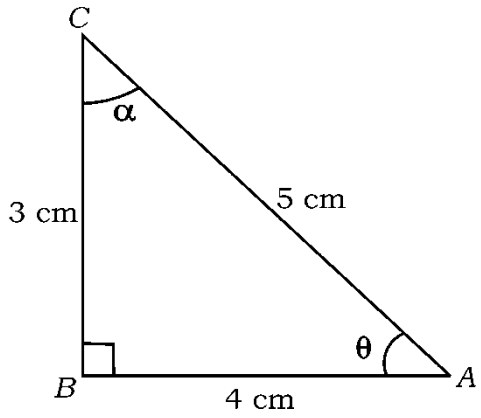
Find the value of the discriminant of the quadratic equation $x^2 + 6x + 9 = 0$ and write the nature of roots.

20. Find the sum of first 16 terms of the arithmetic progression 1, 5, 9, ... using formula.

21. In the given figure *PA* and *PB* are the tangents drawn to a circle with centre *'O'* from an external point *P*. If *OA* = 5 cm, *OP* = 13 cm, then find the measure of *PB*.



22. In ΔABC, if $\angle B = 90°$ then find the values of $\sin\theta$ and $\cot\alpha$.



23. Find the area of a sector of a circle with radius 21 cm, if angle of the sector is 60°.

OR

If the radius of a sector of a circle is 14 cm, and the length of the arc of the sector is 22 cm, then find the angle of the sector.

24. Find the distance between the points (– 5, 7) and (– 1, 3) using distance formula.

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

25. Find the LCM and HCF of the numbers 510 and 92 by prime factorization method and also verify that the product of LCM and HCF of those numbers is equal to the product of the numbers.

26. Find the zeroes of the quadratic polynomial $p(x) = x^2 + 7x + 10$ and verify the relationship between the zeroes and the coefficients.

OR

If the sum and product of the zeroes of a quadratic polynomial are – 6 and 8 respectively, then find the quadratic polynomial, also find the zeroes of the polynomial.

27. Denominator of a fraction is 2 more than its numerator. If the sum of the fraction and its reciprocal is $\frac{34}{15}$, then find the fraction.

28. In ΔABC, X and Y are any points on AB and AC respectively such that $\angle AYX = \angle ABC$. Prove that $\frac{AY}{AB} = \frac{YX}{BC}$.

OR

ABC is an equilateral triangle. AD is the perpendicular drawn to BC. Prove that $\Delta ABD \sim \Delta ACD$.

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

30. Evaluate : $\frac{\sin 30^\circ + \tan 45^\circ - \text{cosec } 60^\circ}{\sec 30^\circ + \cos 60^\circ + \cot 45^\circ}$

OR

Prove that : $\sqrt{\frac{\text{cosec } A + 1}{\text{cosec } A - 1}} = \sec A + \tan A$.

31. Find the ratio in which y-axis divides the line segment joining the points $(5, -6)$ and $(-1, -4)$. Find the co-ordinates of the point of intersection also.

32. The marks distribution of 30 students in a mathematics examination are given in the table below. Find the mode of this data.

Class-interval (Marks)	*Frequency (Number of students)*
10 – 25	2
25 – 40	3
40 – 55	7
55 – 70	6
70 – 85	6
85 – 100	6

OR

The following frequency distribution gives the monthly consumption of electricity of 68 consumers of a locality. Find the median of this data :

Monthly consumption (units)	*Number of consumers*
65 – 85	4
85 – 105	5
105 – 125	13
125 – 145	20
145 – 165	14
165 – 185	8
185 – 205	4

33. A box contains 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be

i) a red marble

ii) not a green marble ?

V. <u>Answer the following questions</u> : **4 × 4 = 16**

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

$2x + y = 8$

$x + y = 5$

35. Prove that "If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio".

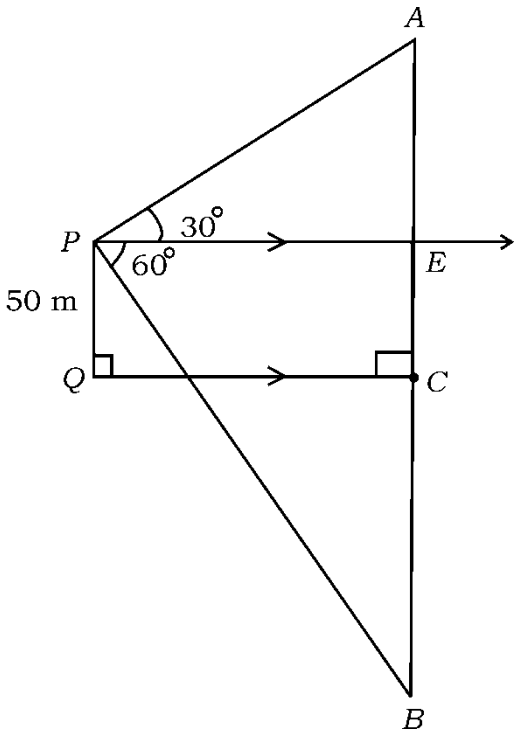
36. An arithmetic progression having 'positive common difference' consists of 20 terms. The sum of its first term and last term is 59. The difference of its 8th term and 6th term is 6. Write the arithmetic progression and also calculate the 10th term of the progression.

OR

In an arithmetic progression, the sum of first three terms is 24. The sum of 2nd, 4th and 6th terms is zero. Find which term of this arithmetic progression is – 24.

37. In the given figure the angle of elevation from point *'P'* to the point *'A'* is found to be 30° and the angle of depression to the

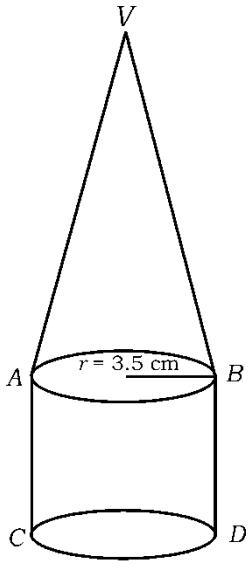
point *'B'* from the same point is found to be 60°. If *'C'* is the mid-point of *AB* and *PQ* = 50 m, then calculate the length of *AC*.



VI. <u>Answer the following question</u> : **1 × 5 = 5**

38. A metallic solid is formed by surmounting a right circular cone on a cylinder as shown in the figure. The radius of the base of cone and cylinder is equal to 3·5 cm. The curved surface area of cone

is equal to curved surface area of cylinder and the volume of cone is 154 cm^3. Calculate the volume of the metallic solid.



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