ಒಟ್ಟು ಮುದ್ರಿತ ಪುಟಗಳ ಸಂಖ್ಯೆ : 16]

Total No. of Printed Pages : 16]

ಒಟ್ಟು ಪ್ರಶೆಗಳ ಸಂಖ್ಯೆ : 38]

Total No. of Questions : 38]

ಸಂಕೇತ ಸಂಖ್ಯೆ : **81-E**

Code No. : **81-E**

B

CCE RR
UNREVISED
REDUCED SYLLABUS

Question Paper Serial No. **300**

TEAR HERE TO OPEN THE QUESTION PAPER

ವಿಷಯ : ಗಣಿತ

Subject : MATHEMATICS

(ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ / English Medium)

(ಪುನರಾವರ್ತಿತ ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / Regular Repeater)

ದಿನಾಂಕ : 03. 04. 2023]   [Date : 03. 04. 2023

ಸಮಯ : ಬೆಳಗ್ಗೆ 10-30 ರಿಂದ ಮಧ್ಯಾಹ–1-45 ರವರೆಗೆ]

[Time : 10-30 A.M. to 1-45 P.M.

ಗರಿಷ್ಠ ಅಂಕಗಳು : 80]   [Max. Marks : 80

General Instructions to the Candidate :

1. This question paper consists of objective and subjective types 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. Check whether all the pages of the question paper are intact.

3. Follow the instructions given against both the objective and subjective types of 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

Tear here

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 common difference of the Arithmetic progression

    – 3, – 1, 1, 3 ... is

    (A)   3   (B)   2

    (C)   – 1   (D)   – 2

2.   The median of the scores 6, 4, 2, 10 and 7 is

    (A)   6   (B)   10

    (C)   4   (D)   2

3.   The total surface area of a right circular cylinder having radius *'r'*

    and height *'h'* is

    (A) $\pi r (r + h)$ (B) $2\pi rh$

    (C) $2\pi r (r - h)$ (D) $2\pi r (r + h)$

4.   Which of the following are the sides of a right angled triangle ?
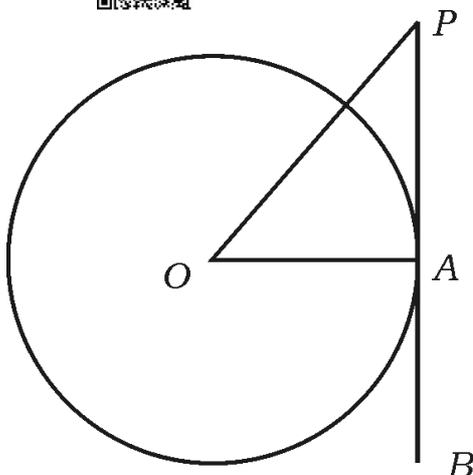
   (A) 2, 3, 4   (B) 4, 5, 6

   (C) 3, 4, 5   (D) 6, 8, 12

5.   In the given figure, *PB* is a tangent drawn at the point *A* to the circle with centre '*O*'. If $\lfloor AOP$ = 45°, then the measure of $\lfloor OPA$ is

   (A) 45°   (B) 90°

   (C) 35°   (D) 65°

   [Turn over

6. In the figure, if *DE* || *BC*, then the correct relation among the following is
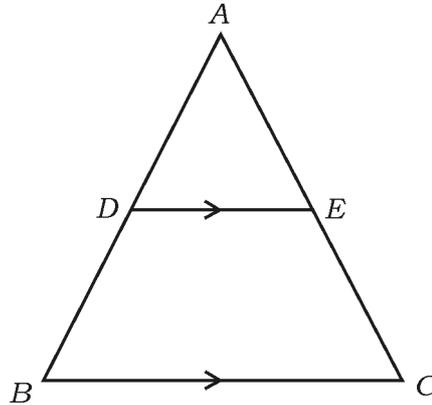
(A) $\dfrac{AD}{AB} = \dfrac{AE}{EC}$ (B) $\dfrac{AD}{DB} = \dfrac{EC}{AE}$

(C) $\dfrac{AD}{DB} = \dfrac{AE}{EC}$ (D) $\dfrac{DB}{AD} = \dfrac{AE}{EC}$

7. The lines represented by the equations $4x + 5y - 10 = 0$ and $8x + 10y + 20 = 0$ are

(A) intersecting lines

(B) perpendicular lines to each other

(C) coincident lines

(D) parallel lines

8. The distance of the point $(-8, \ 3)$ from the *x*-axis is

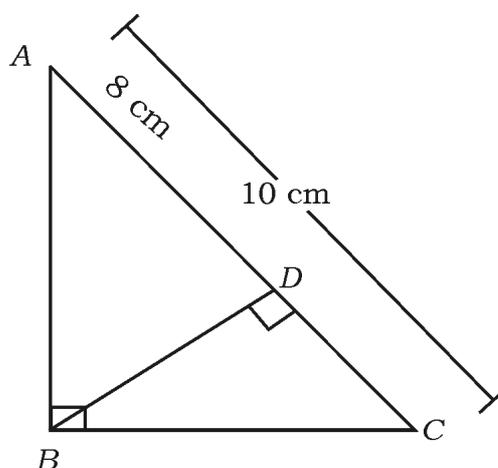(A) -8 units   (B) 3 units

(C) -3 units   (D) 8 units

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

9. In Δ *ABC,* ∟ *ABC* = 90° and *BD* ⊥ *AC.* If *AC* = 10 cm and

 AD = 8 cm, find the length of *BD.*

10. If the pair of lines represented by the linear equations

 $x + 2y - 4 = 0$ and $ax + by - 12 = 0$ are coincident lines, then

 find the values of '*a*' and '*b*'.

11. Δ *ABC* ~ Δ *PQR.* Area of the Δ *ABC* = 64 cm^2 and the area of the

 Δ *PQR* is 100 cm^2. If *AB* = 8 cm, then find the length of *PQ.*

[Turn over

12. Express the equation $x (2 + x) = 3$ in the standard form of a quadratic equation.

13. Find the discriminant of the quadratic equation $2x^2 - 4x + 3 = 0$.

14. Find the coordinates of the mid-point of the line segment joining the points $(6, 3)$ and $(4, 7)$.

15. If one root of the quadratic equation $(2x + 1) (x - 3) = 0$ is $-\dfrac{1}{2}$ then find the other root.

16. Write the formula to find the volume of the frustum of a cone given in the figure.
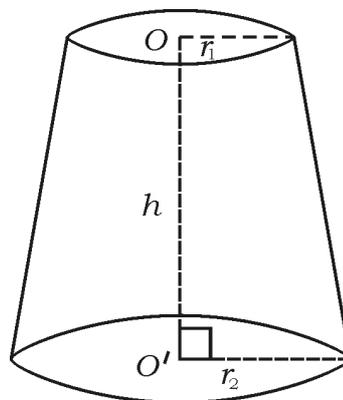
III.   Answer the following questions :   **8 × 2 = 16**

17. Find the distance between the origin and the point (6, 8).

18. Solve the given pair of linear equations by elimination method :

$$3x + y = 12$$

$$x + y = 6$$

19. Find the 20th term of the arithmetic progression 4, 7, 10, ...
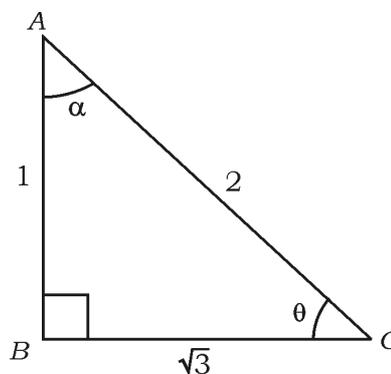
by using formula.

20. Find the roots of the equation $2x^2 - 5x + 3 = 0$ by using 'quadratic formula'.

OR

Find the roots of the equation $x^2 - 3x - 10 = 0$ by factorisation method.

21. In the given figure, if $\lfloor ABC = 90°$, then find the values of sin θ and cos α.

[Turn over

22. If $\cos \theta = \sin 60° . \cos 30° - \sin 30° . \cos 60°$, then find the value of 'θ'.

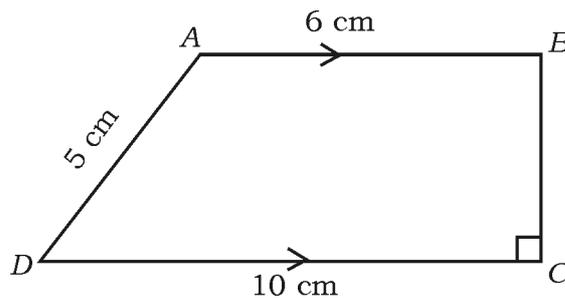**OR**

If $\sin 3A = \cos (A - 26°)$, where $3A$ is an acute angle then find the value of A.

23. In the given figure, $ABCD$ is a trapezium in which $AB \parallel DC$ and $BC \perp DC$. If $AB = 6$ cm, $CD = 10$ cm and $AD = 5$ cm, then find the distance between the parallel lines.

24. Draw a circle of radius 4 cm and construct a pair of tangents to the circle such that the angle between them is 60°.

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

25. Find the roots of the equation $\dfrac{1}{x+4} - \dfrac{1}{x-7} = \dfrac{11}{30}$, $x \neq -4, 7$.

OR

Examine whether the equation $(x-2)(x+1) = (x-1)(x+3)$

is a quadratic equation.

26. Prove that

$$\sqrt{\dfrac{1+\cos A}{1-\cos A}} = \operatorname{cosec} A + \cot A$$

OR

Prove that

$$\dfrac{\sin A}{1+\cos A} + \dfrac{1+\cos A}{\sin A} = 2 \operatorname{cosec} A.$$

27. Find the mean for the following data :

Class-interval	Frequency
1 – 5	4
6 – 10	3
11 – 15	2
16 – 20	1
21 – 25	5

OR

[Turn over

Find the mode for the following data :

Class-interval	Frequency
1 – 3	6
3 – 5	9
5 – 7	15
7 – 9	9
9 – 11	1

28. Find the ratio in which the line segment joining the points

A (– 6, 10) and B (3, – 8) is divided by the point (– 4, 6).

OR

Find the area of a triangle whose vertices are A (1, – 1),

B (– 4, 6) and C (– 3, – 5)

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

30. The volume of a solid metallic cylinder is 4851 cm^3. It is fully melted and recast into a solid sphere. Find the radius of the sphere.

31. Construct a triangle with sides 5 cm, 6 cm and 8 cm and then construct another triangle whose sides are $\frac{3}{4}$ of the corresponding sides of the first triangle.

32. The distance between two cities 'A' and 'B' is 132 km. Flyovers are built to avoid the traffic in the intermediate towns between these cities. Because of this, the average speed of a car travelling in this route through flyovers increases by 11 km/h and hence, the car takes 1 hour less time to travel the same distance than earlier. Find the current average speed of the car.
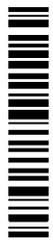
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33. A life insurance agent found the following data for distribution of ages of 100 policy holders. Draw a "Less than type ogive" for the given data :

Age (in years)	Number of policy holders (cumulative frequency)
Below 20	2
Below 25	6
Below 30	24
Below 35	45
Below 40	78
Below 45	89
Below 50	100

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

34. The sum of 2nd and 4th terms of an arithmetic progression is 54 and the sum of its first 11 terms is 693. Find the arithmetic progression. Which term of this progression is 132 more than its 54th term ?

OR

The first and the last term of an arithmetic progression are 3 and 253 respectively. If the 20th term of the progression is 98, then find the arithmetic progression. Also find the sum of the last 10 terms of this progression.

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

$2x + y = 8$

$x - y = 1$

36. Prove that "If in two triangles, corresponding angles are equal, then their corresponding sides are in the same ratio (or proportion) and hence the two triangles are similar".

[Turn over

37. In the given figure, a rope is tightly stretched and tied from the top of a vertical pole to a peg on the same level ground, such that the length of the rope is 20 m and the angle made by it with the ground is 30°. A circus artist climbs the rope, reaches the top of the pole and from there he observes that the angle of elevation of the top of another pole on the same ground is found to be 60°. If the distance of the foot of the longer pole from the peg is 30 m, then find the height of this pole. (Take $\sqrt{3}$ = 1·73)
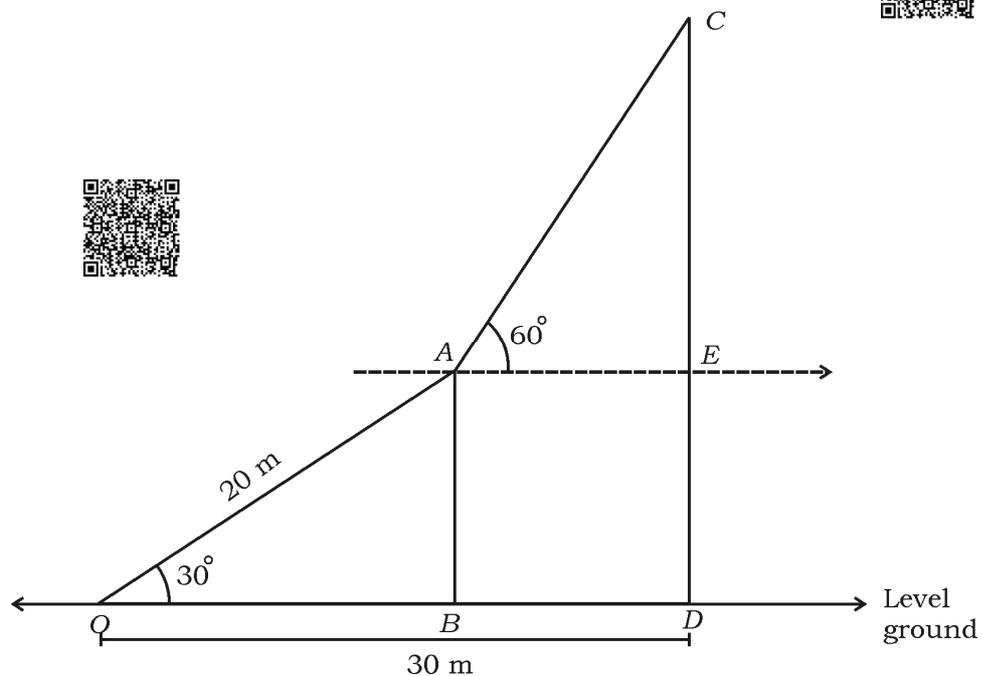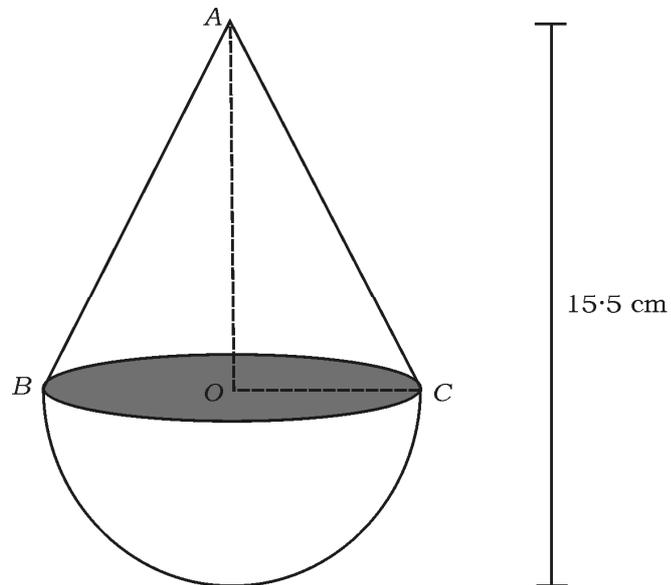
38. A wooden solid toy is made by mounting a cone on the circular base of a hemisphere as shown in the figure. If the area of base of the cone is 38·5 cm^2 and the total height of the toy is 15·5 cm, then find the total surface area and volume of the toy.

15·5 cm