COMMON THIRD MID-TERM TEST - 2023

Standard IX

Reg.No. ☐☐☐☐☐☐

MATHEMATICS

Time: 1.30 hours

Part - I

Marks: 50

I. Choose the correct answer:

7 x 1 = 7

1. If $\sin 30° = x$ and $\cos 60° = y$, then $x^2 + y^2$ is

   a) $\frac{1}{2}$ 　　　　b) 0 　　　　c) $\sin 90°$ 　　　　d) $\cos 90°$

2. The value of $\dfrac{1 - \tan^2 45°}{1 + \tan^2 45°}$ is

   a) 2 　　　　b) 1 　　　　c) 0 　　　　d) $\frac{1}{2}$

3. The value of $\tan 1° \tan 2° \tan 3° \ldots\ldots \tan 89°$ is

   a) 0 　　　　b) 1 　　　　c) 2 　　　　d) $\frac{\sqrt{3}}{2}$

4. Given that $\sin \alpha = \frac{1}{2}$ and $\cos \beta = \frac{1}{2}$, then the value of $\alpha + \beta$ is

   a) 0° 　　　　b) 90° 　　　　c) 30° 　　　　d) 60°

5. If the sides of a triangle or 3 cm, 4 cm and 5 cm, then the area is

   a) 3 cm² 　　　　b) 6 cm² 　　　　c) 9 cm² 　　　　d) 12 cm²

6. If the lateral surface area of a cube is 600 cm², then the total surface area is

   a) 150 cm² 　　　　b) 400 cm² 　　　　c) 900 cm² 　　　　d) 1350 cm²

7. If the ratio of the sides of two cubes are two 2:3, then ratio of their surface area will be

   a) 4:6 　　　　b) 4:9 　　　　c) 6:9 　　　　d) 16:36

Part - II

II. Answer any 5 questions.

5 x 2 = 10

8. If $\tan A = \frac{2}{3}$, then find all the other trigonometric ratios.

9. Evaluate : $\sin 30° + \cos 30°$

10. Evaluate : $\dfrac{\sin 49°}{\cos 41°}$

11. If $\operatorname{cosec} A = \sec 34°$ then find A.

12. Using Heron's formula, find the area of the triangle whose sides are 10 cm, 24 cm, 26 cm.

13. Find the total surface area and lateral surface area of the cube whose sides is 5 cm.

14. Find the total surface area of a cuboid whose dimensions are : length = 20 cm, breadth = 15 cm and height = 8 cm.

(2)

IX Maths

Part - III

III. Answer any 5 questions.

5 x 5 = 25

15. If $\cos A = \dfrac{3}{5}$, then find the value of $\dfrac{\sin A \quad \cos A}{2 \tan A}$

16. Verify $\cos 3A = 4\cos^3 A - 3\cos A$, when $A = 30°$

17. Find the value of $\tan 7° \tan 23° \tan 60° \tan 67° \tan 83°$

18. The lengths of sides of a triangular field are 28 m, 15 m and 41 m. Calculate the area of the field. Find the cost of levelling the field at the rate of ₹20 per m².

19. Find the area of an equilateral triangle whose perimeter is 180 cm.

20. A cube has the total surface area of 486 cm². Find its lateral surface area.

21. A cubical container of side 6.5 m is to be painted on the entire outer surface. Find the area to be painted and the total cost of painting it at the rate of ₹24 per m².

Part - IV

IV. Answer the following.

1 x 8 = 8

22. a) Draw a triangle ABC, where AB = 8 cm, BC = 6 cm and ∠B = 70° and locate its circumcentre and draw the circumcircle.

(OR)

b) The perimeter of a rectangle is 36 metres and the length is 2 metres more than three times the width. Find the dimension of rectangle by using the method of graph.

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