DEENS

GRADE 10 / MATHEMATICS
DECEMBER 2019 / PERIODIC TEST / 03

TIME: 1 HR 30 MIN **MAX MARKS: 40**

Section – A
(Questions 1 to 10 carry 1 mark each)

I. Choose the correct answer :

1. If PA and PB are the tangents to a circle with centre 'O' such that $\angle APB = 50°$ then $\angle OAB$ is equal to _____
   (a) 25° (b) 130° (c) 40° (d) 50°

2. Which of the following cannot be the general term of an AP ?
   (a) $4n + 3$ (b) $3n^2 + 5$ (c) $\frac{2n-4}{5}$ (d) $n + 2$

3. The ordinate of a point A on the y-axis is 5 and B has coordinates (-3, 1) then the length of AB is _____
   (a) 2 units (b) 5 units (c) 4 units (d) 3 units

4. The surface area of a sphere is 616 cm^2. Its radius is _____
   (a) 7 cm (b) 14 cm (c) 21 cm (d) 28 cm

5. A square ABCD is inscribed in a circle of radius 10 units. The area of the circle, not included in the square is _____ ($\prod = 3.14$)
   (a) 114 sq. unit (b) 124 sq. unit (c) 134 sq. unit (d) 144 sq. unit

6. If the sum of the areas of two circles with radii R_1 and R_2 is equal to the area of a circle of radius R, then
   (a) $R_1 + R_2 = R$ (b) $R_1^2 + R_2^2 = R^2$ (c) $R_1 + R_2 < R$ (d) $R_1^2 + R_2^2 < R^2$

II Answer the following questions :

7. Two identical cubes of side 'a' are joined end to end then find the total surface area of the resulting cuboid.

8. Find the sum of the first 1000 positive integers.

9. If A (-2,4) , B (0,0) and C (4, 2) are the vertices of a Δ ABC then find the length of median through the vertex A.

10. If the area of a circle is 154 cm^2 then find its perimeter.

Section – B
(Questions 11 to 13 carry 2 marks each)

11. The angles of a triangle are in AP. The greatest angle is twice the least. Find all the angles of the triangle.

12. Prove that the points (2, -2) , (-3, 8) and (-1, 4) are collinear.

13. An athletic track, 14 m wide, consists of two straight sections 120 m long joining semi-circular ends whose inner radius is 35 m. Calculate the area of the track.

(OR)

To warn ships for underwater rocks, a light house throws a red coloured light over a sector of 80° angle to a distance of 16.5 km. Find the area of the sea over which the ships are warned.

(Question Nos. 14 to 17 carry 3 marks each)

14. Water in a canal, 6m wide and 1.5 m deep , is flowing with a speed of 10 km/h. How much area will it irrigate in 30 minutes, if 8 cm of standing water is needed ?

15. Find the sum of the last ten terms of the AP : 8, 10, 12, 14, ..., 126

(OR)

How many terms of the series 54, 51, 48, ... be taken so that their sum is 513 ? Explain the double answer.

16. Prove that the centre of a circle touching two intersecting lines lies on the angle bisector of the lines.

17. Find the value of 'a' for which the area of the triangle formed by the points A (a, 2a), B (-2, 6) and C (3, 1) is 10 square units.

(OR)

Point P divides the line segment joining the points A(2,1) and B (5,-8) such that $\frac{AP}{AB}=\frac{1}{3}$. If P lies on the line 2x-y+k=0, find the value of ' k '.

Section D

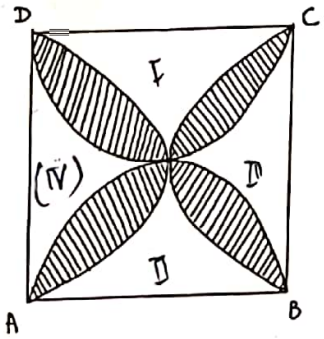
(Question Nos. 18 to 20 carry 4 marks each)

18. A metallic right circular cone 20 cm high and whose vertical angle is 60° is cut into two parts at the middle of its height by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter 1/16 cm, find the length of the wire.

(OR)

Water is flowing at the rate of 5 km/hr through a pipe of diameter 14 cm into a rectangular tank which is 50 m long and 44 m wide. Determine the time in which the level of the water in the tank will rise by 7 cm.

19. ABCD is a square of side 10 cm. Semi-circles are drawn with each side of square as diameter. Find the area of the (i) unshaded region (ii) shaded region



20. A circle is touching the side BC of Δ ABC at P and touching AB and AC produced at Q and R respectively. Prove that AQ = ½ (Perimeter of Δ ABC)

(OR)

Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that ∠PTQ = 2 ∠OPQ.

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