

Time : 1 Hour 30 Minute

STD 10 Maths

Total Marks : 50

Chapter Based Test

Section A

* Choose the right answer from the given options. [1 Marks Each] [7]

1. If diameter of a circle is increased by 40%, then its area increase by:
(A) 96% (B) 40% (C) 80% (D) 48%
2. The area of a square that can be inscribed in a circle of radius 10cm is:
(A) 200 sq.cm (B) 150 sq.cm (C) 100 sq.cm (D) 300 sq.cm
3. If the perimeter of a circle is equal to that of a square, then the ratio of their areas is:
(A) 22 : 7 (B) 14 : 11 (C) 7 : 22 (D) 11 : 14
4. Tick the correct answer in the following and justify your choice: If the perimeter and the area of a circle are numerically equal, then the radius of the circle is:
(A) 2 units (B) π units (C) 4 units (D) 7 units
5. In the figure, if ABC is an equilateral triangle, then shaded area is equal to?
(A) $\left(\frac{\pi}{3} - \frac{\sqrt{3}}{4}\right)r^2$ (B) $\left(\frac{\pi}{3} - \frac{\sqrt{3}}{2}\right)r^2$ (C) $\left(\frac{\pi}{3} + \frac{\sqrt{3}}{4}\right)r^2$ (D) $\left(\frac{\pi}{3} + \sqrt{3}\right)r^2$
6. The area of a square is the same as the area of a circle. Their perimeters are in the ratio:
a. 1 : 1
b. 2 : π
c. π : 2
d. $\sqrt{\pi}$: 2
7. The radii of two concentric circles are 19 cm and 16 cm respectively. The area of the ring enclosed by these circles is:
a. 320cm²
b. 330cm²
c. 332cm²
d. 340cm²

* A statement of Assertion (A) is followed by a statement of Reason (R). [3]

Choose the correct option.

8. **Directions:** In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:
Assertion: If the outer and inner diameter of a circular path is 10m and 6m, then area of the path is $16\pi r^2$

Reason: If R and r be the radius of outer and inner circular path respectively, then area of path = $\pi(R^2 - r^2)$

- Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- Assertion (A) is true but reason (R) is false.
- Assertion (A) is false but reason (R) is true.

9. **Directions:** In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

Assertion (A): The length of the minute hand of a clock is 7 cm. Then the area swept by the minute hand in 5 minutes is $12\frac{5}{6}\text{cm}^2$.

Reason (R): 'The length of an arc of a sector of angle θ and radius 7 is given by

$$l = \frac{\theta}{360} \times 2\pi r.$$

- Both A and R are true and R is the correct explanation for A.
- Both A and R are true and R is not the correct explanation for A.
- A is true but R is false.
- A is false but R is true.

10. **Directions:** In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

Assertion: (A) If the outer and inner diameter of a circular path is 10m and 6m respectively, then area of the path is $16\pi\text{m}^2$

Reason: (R) If R and r be the radius of outer and inner circular path respectively, then area of circular path = $\pi(R^2 - r^2)$.

- Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- Assertion (A) is true but reason (R) is false.
- Assertion (A) is false but reason (R) is true.

* **State whether the following sentences are True or False. [1 Marks Each] [2]**

- Will it be true to say that the perimeter of a square circumscribing a circle of radius a cm is $8a$ cm? Give reasons for your answer.
- Is it true to say that area of a square inscribed in a circle of diameter p cm is $p^2\text{cm}^2$? Why?

* **Answer the following questions in one sentence. [1 Marks Each] [2]**

- The cost of carpeting a room 15m long with a carpet 75cm wide, at ₹ 70 per metre, is ₹ 8400. The width of the room is:
 - 9m
 - 8m
 - 6m
 - 12m.
- Tick the correct answer in the following:
Area of a sector of angle p (in degrees) of a circle with radius R is,

- a. $\frac{p}{180} \times 2\pi R$
- b. $\frac{p}{180} \times 2\pi R^2$
- c. $\frac{p}{360} \times 2\pi R$
- d. $\frac{p}{720} \times 2\pi R^2$

Section B

* Given section consists of questions of 2 marks each. [10]

1. An umbrella has 8 ribs which are equally spaced (see figure). Assuming umbrella to be a flat circle of radius 45 cm, Find the area between the two consecutive ribs of the umbrella.

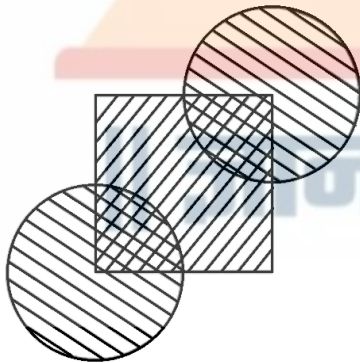


2. In a circle of radius 6cm, a chord of length 10cm makes an angle of 110° at the centre of the circle. Find:
The length of the arc AB,
3. Write the area of the sector of a circle whose radius is r and length of the arc is l .
4. A sector is cut-off from a circle of radius 21cm. The angle of the sector is 120° . Find the length of its arc and the area.
5. The minute hand of a dock is 15cm long. Calculate the area kwept by it in 20 minutes.
[Take $\pi = 3.14$]

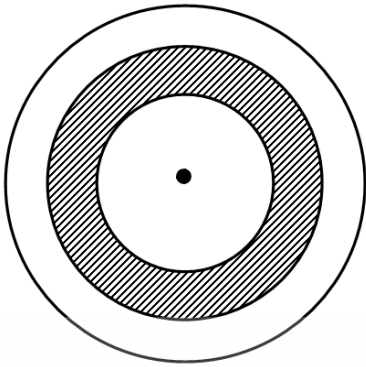
Section C

* Given section consists of questions of 3 marks each. [12]

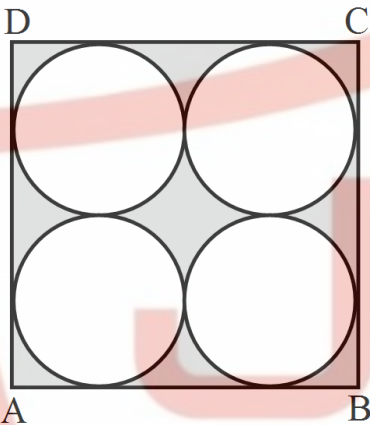
1. In the given figure, the side of square is 28cm and radius of each circle is half of the length of the side of the square where O and O' are centres of the circles. Find the area of shaded region.



2. An archery target has three regions formed by the concentric circles as shown in the figure. If the diameters of the concentric circles are in the ratio 1:2:3, then find the ratio of the areas of three regions.



3. In the given figure, find the area of the shaded region, where ABCD is a square of side 14cm and all circles are of the same diameter.



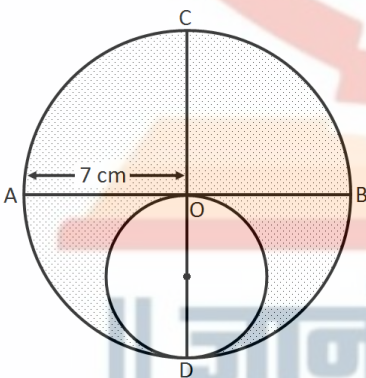
4. Find the radius of a circle whose perimeter and area are numerically equal.

Section D

* Given section consists of questions of 5 marks each.

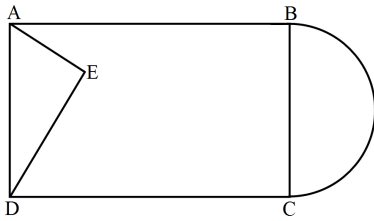
[10]

1. In the following figure, AB and CD are two diameters of a circle perpendicular to each other and OD is the diameter of the smaller circle. If OA = 7cm, find the area of the shaded region.



2. In the given figure, from a rectangular region ABCD with AB = 20cm, a right triangle AED with AE = 9cm and DE = 12cm, is cut off. On the other end, taking BC as diameter, a semicircle is added on outside the region. Find the area of the shaded region.

[Use $\pi = 3.14$]

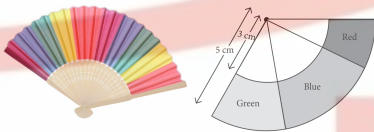


Section E

* Case study based questions

[4]

1. Sara hold a Japanese folding fan in her hand as shown in the figure. It is shaped like a sector of a circle and made of a thin material such as paper or feather. 'The inner and outer radii are 3cm and 5cm respectively. 'The fan has three colours i.e., red, blue, and green.



Based on the above information, answer the following questions.

- i. The region given in the figure represents.
 - ii. If the region containing red color makes an angle of 20° at the center, then find the perimeter of the region containing red color.
 - iii. If the region containing blue color makes an angle of 80° at the center, then find the area of the region having blue color.
- Or
- If the region containing green color makes an angle of 60° at the center, then find the area of the region having green color.



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