Pre Board MT -05

INFINITY THINK BEYOND..... AN EDUCATIONAL INSTITUTE

10 th

Syllabus: Mock Test 05 : Ch – Surface Area & Volume And Area Related To Circles

Time: 90 min **Maximum marks :40**

INSTRUCTIONS TO THE STUDENTS

1 . Read each question carefully .
2. Mark of each question is mention in front of question .
3. Attempt one question in internal choice based question .
4. Use of calculators is not allowed.
5. No negative marking .

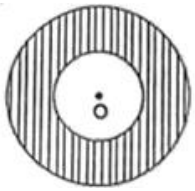
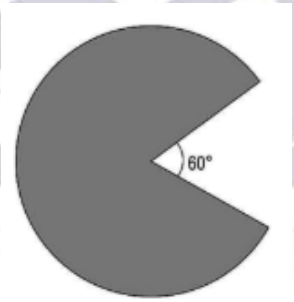
SECTION A

(Questions 1 – 10 carry 1 marks)

1	The maximum volume of a cone that can be carved out of a solid hemisphere of radius r is (a)$3\pi r^2$ (b)$\frac{\pi r^3}{3}$ (c) $\frac{\pi r^2}{3}$ (d) $3\pi r^3$	**1**
2	If the area of a sector of a circle bounded by an arc of length $5\pi cm$ is equal to 20 π sq cm , then the radius of the circle is (a)12cm (b)16 cm (c)8cm (d)10cm	**1**
3	If the perimeter of the circle and square are equal , then the ratio of area of circle to square is (a)14:11 (b)22:7 (c)7:22 (d)11:14	**1**
4	In an arc subtends at an angle 90° at the centre of a circle , then the ratio of its length to the circumference of the circle is (a)2:3 (b)4:1 (c)1:4 (d)1:3	**1**
5	The sum of the length, breadth and height of a cuboid is $6\sqrt{3}$ cm and the length of its diagonal is $2\sqrt{3}$. The total surface area of the cuboid is (a)48cm ^{2} (b)72cm^2 (c)96cm^2 (d)108cm^2	**1**
6	A cylinder, a cone and a hemisphere are of equal and arc of the same height. What is the ratio of their volume? (a)3:1:2 (b)3:2:1 (c)1:2:3 (d)1:3:2	**1**
7	A sphere of diameter 18cm is dropped into a cylinder vessel of diameter 36cm , partly filled with water. If the sphere is completely submerged , then the water level rises (in cm) by (a)3 (b)4 (c)5 (d)6	**1**
8	A solid ball is exactly fitted inside the cubical box of side a . The volume of ball is (a)$\frac{1}{6}\pi a^3$ (b) $\frac{4}{3}\pi a^3$ (c) $\frac{1}{3}\pi a^3$ (d)none of these	**1**
9	If the area of the base of a right circular cone is 51 cm^2 and it's volume is 85cm^3 , then the height of the cone is given as (a)5/6 (b)5/3 (c)5/2 (d)5cm	**1**
10	**Statement A(Assertion):** If the area of a quadrant of a circle is 38.5cm^2 , then its radius is 7cm **Statement R(Reason):** Area of quadrant of a circle = $2\pi r^2$ (a)Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A) (b)Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A) (c)Assertion (A) is true but reason (R) is false. (d) Assertion (A) is false but reason (R) is true.	**1**

SECTION B

(Questions 11 – 13 carry 2 marks)

11	(a)Find the area of quadrant of a circle whose circumference is 22cm. **OR** (b)A pendulum swings though an angle of 30° and describes an arc 8.8 cm in length. Find the length of pendulum	**2**
12	(a)In the given figure , the area of the shaded region between two concentric circles is 286 cm^2 . If the difference of the radii of the two circles is 7cm , find the sum of their radii.  **OR** (b)A boy is cycling such that the wheels of the cycle are making 140 revolutions per minute. If the diameter of the wheel is 60cm , calculate the speed per hour with which the boy is cycling [use $\pi = \frac{22}{7}$]	**2**
13	Wasim made a model of Pac-Man, after playing the famous video game of the same name . The area of the model id $120\pi cm^2$. Pac –Man's mouth forms an angle of 60° at the centre of the circle. A picture of the model is shown below  Wasim wants to decorate the model by attaching a coloured ribbon to the entire boundary of the shape. What is the minimum length of the ribbon required in terms of π.	**2**

SECTION C

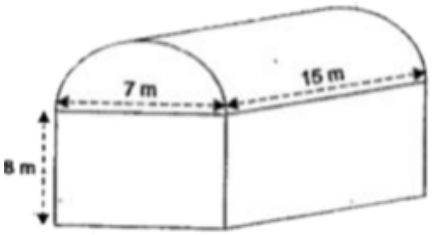
(Questions 14 – 15 carry 3 marks)

14	The difference between the outer and the inner radii of a hollow right circular cylinder of length 14cm, is 1cm. If the volume of metal used in making cylinder 176cm^3 , find the outer and the inner radii of the cylinder	**3**
15	(a)A solid wooden toy is in the form of a hemisphere surmounted by a cone of same radius . The radius of hemisphere is 3.5 cm and the total wood used In the making of toy is $166\frac{5}{6}$ cm 3 . Find the height of the toy (π= 22/7) **OR** (b)A circus tent is in the shape of a cylinder surmounted by a conical top of same diameter. If their common diameter is 56m , the height of cylinder part is 6m and the total height of the tent above the ground is 27m , find the area of canvas used in the tent (π= 22/7)	**3**

SECTION D

(Questions 16 – 17 carry 5 marks)

16	A woman runs a small – scale industry in a shed made out of metal , which is in the shape of a cuboid surmounted by a half cylinder as shown in the figure. In the base of the shed is of dimensions 7m ×15m and the height of the cuboid portion is 8m , find the volume of the shed. Also find the amount of metal required to construct the shed.	**5**



17 (a)Find the number of bricks , each measuring 25cm × 12.5cm × 7.5cm , required to construct a wall 24m long , 20 m high and 0.5 m thick while the cement and sand mixture occupies $\frac{1}{20}$ th of the volume of the wall. **5**

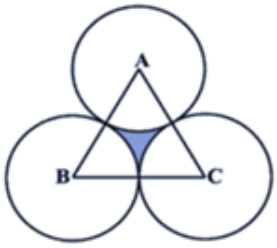
OR

(b)Irrigation canals are used to move water from a source (whether it is a stream, reservoir or holding tank).A farmer connects a pipe of internal diameter 20cm from a canal into a cylindrical tank in his field , which is 10m in diameter 20cm from a canal into a cylinder tank in his field , which is 10m in diameter and 2m deep. If water flows through the pipe at the rate of 6km/h. How much time will the tank be filled ?

SECTION E

(Questions 18 – 19 carry 4 marks)

18 In an art integrated class, a wall hanging was done by a group of students as shown in the fig. The wall handing was made in such a way that the area of the equilateral triangle ABC is 173.2 cm^2 and the radius of each circle is equal to half the length of the side of the triangle. A net is used to cover the portion enclosed between the triangle and the three sectors (shaded region)(use $\sqrt{3}$ = 1.732, π= 3.14) **4**



Answer the question based on above information:

(i)Find the radius of the circle

(ii)Find the perimeter of the shaded portion

(iii)(a) Find the area of the portion covered with the net

OR

(b)Find the area of the 3 major sectors

19 Kritika bought a pendulum clock for her living room. The clock contains a small pendulum of length 15 cm . The minute hand and hour hand of the clock are 9 cm and 6 cm long respectively. **4**

Based on the given information, answer the following questions:

	(i)Find the area swept by the minute hand in 10 minutes. (ii) If the pendulum covers a distance of 22 cm in the complete oscillation, then find the angles described by pendulum at the centre (iii)(a)Find the area swept by the hour in 1 hour OR (b)Find the area swept by the hour and between 11am and 5pm	