RK VISION ACADEMY

NEET | IIT – JEE | FOUNDATION

CBSE PRACTICE PAPER(2024)

(Mathematics)

Grade : X **Marks: 40 marks**

Chapter: MENSURATION **SET-2** **Time: 90 minutes**

SECTION A

(This section comprises of Multiple-choice questions (MCQ) of 1 mark each.)

1. A shuttle cock used for playing badminton has the shape of the combination of

(A) a cylinder and a sphere (B) a cylinder and a hemisphere (C) a sphere and a cone (D) frustum of a cone and a hemisphere

2. A cone is cut through a plane parallel to its base and then the cone that is formed on one side of that plane is removed. The new part that is left over on the other side of the plane is called

(A) a frustum of a cone (B) cone (C) cylinder (D) sphere

3. A hollow cube of internal edge 22cm is filled with spherical marbles of diameter 0.5 cm and it is assumed that 1/ 8 space of the cube remains unfilled. Then the number of marbles that the cube can accommodate is

(A) 142296 (B) 142396 (C) 142496 (D) 14259

4. Twelve solid spheres of the same size are made by melting a solid metallic cylinder of base diameter 2 cm and height 16 cm. The diameter of each sphere is

(A) 4 cm (B) 3 cm (C) 2 cm (D) 6 cm

5. The radii of the top and bottom of a bucket of slant height 45 cm are 28 cm and 7 cm, respectively. The curved surface area of the bucket is

(A) 4950 cm^2 (B) 4951 cm^2 (C) 4952 cm^2 (D) 4953 cm^2

6. A medicine-capsule is in the shape of a cylinder of diameter 0.5 cm with two hemispheres stuck to each of its ends. The length of entire capsule is 2 cm. The capacity of the capsule is

(A) 0.36 cm^3 (B) 0.35 cm^3 (C) 0.34 cm^3 (D) 0.33 cm^3

7. If two solid hemispheres of same base radius r are joined together along their bases, then curved surface area of this new solid is

(A) $4\pi r^2$ (B) $6\pi r^2$ (C) $3\pi r^2$ (D) $8\pi r^2$

8. A right circular cylinder of radius r cm and height h cm (h>2r) just encloses a sphere of diameter

(A) r cm (B) 2r cm (C) h cm (D) 2h cm

9. During conversion of a solid from one shape to another, the volume of the new shape will

(A) increase (B) decrease (C) remain unaltered (D) be doubled

10. Volumes of two spheres are in the ratio 64:27. The ratio of their surface areas is

(A) 3 : 4 (B) 4 : 3 (C) 9 : 16 (D) 16 : 9

SECTION B

(This section comprises of very short answer type-questions (VSA) of 2 marks each)

11 A spherical steel ball is melted to make eight new identical balls. Then, the radius of each new ball be 1/ 8 th the radius of the original ball.

12 A solid ball is exactly fitted inside the cubical box of side a. The volume of the ball is $\frac{4}{3}\pi a^3$.

13 A solid metallic sphere of radius 10.5 cm is melted and recast into a number of smaller cones, each of radius 3.5 cm and height 3 cm. Find the number of cones so formed.

SECTION C

(This section comprises of short answer type questions (SA) of 3 marks each)

14 Two identical cubes each of volume 64 cm3 are joined together end to end. What is the surface area of the resulting cuboid?

15 Two cones with same base radius 8 cm and height 15 cm are joined together along their bases. Find the surface area of the shape so formed.

16 How many spherical lead shots each of diameter 4.2 cm can be obtained from a solid rectangular lead piece with dimensions 66 cm, 42 cm and 21 cm.

SECTION D

(This section comprises of long answer-type questions (LA) of 5 marks each)

17 A medicine-capsule is in the shape of a cylinder of diameter 0.5 cm with two hemispheres stuck to each of its ends. The length of entire capsule is 2 cm. Find the capacity of the capsule.

18 A rocket is in the form of a right circular cylinder closed at the lower end and surmounted by a cone with the same radius as that of the cylinder. The diameter and height of the cylinder are 6 cm and 12 cm, respectively. If the slant height of the conical portion is 5 cm, then find the total surface area and volume of the rocket, [take $\pi = 3.14$]

19 From a solid cylinder whose height is 2.8 cm and diameter is 1.8 cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid to the nearest cm^2.