



CBSE NCERT Based Chapter wise Questions (2025-2026)

Class-X

Subject: MATHEMATICS

Chapter Name : Surface Areas & Volumes (Chap : 12)

Total : 6 Marks (expected) [MCQ(1)-1 Mark, LA-(1)-5 Marks]

Level - 2 (Higher Order)

Section - A

MCQ Type :

1. A tank is made of the shape of a cylinder with a hemispherical depression at one end. the height of the cylinder is 1.45 m and radius is 30 cm. The total surface of the tank is :

(A) 30 m^2 (B) 3.3 m^2 (C) 30.3 m^2 (D) 3300 m^2

(Hints : Total surface are of tank = CSA of cylinder + CSA of hemisphere)

2. A cone, a hemisphere and cylinder are of the same base and of the same height. The ratio of their volumes is

(A) 1 : 2 : 3 (B) 2 : 1 : 3 (C) 3 : 1 : 2 (D) 3 : 2 : 1

(Hints : $\frac{1}{3}\pi r^2 h : \frac{2}{3}\pi r^3 : \pi r^2 h$)

3. The ratio of the volumes of two spheres is 8 : 27. The ratio between their surface areas is

(A) 2 : 3 (B) 4 : 27 (C) 8 : 9 (D) 4 : 9

(Hints : $\frac{r}{R} = \frac{2}{3}$)

4. The radius (in cm) of the largest right circular cone that can be cut out from a cube of edge 4.2 cm is

(A) 4.2 (B) 2.1 (C) 8.1 (D) 1.05

(Hints : Diameter of base of largest possible cone = 4.2 cm)

5. A cube whose edge is 20 cm long, has circles on each of its faces painted black. What is the total area of the unpainted surface of the cube if the circles are of the largest possible areas ?

(A) 90.72 cm^2 (B) 256.72 cm^2 (C) 330.3 cm^2 (D) 514.28 cm^2

(Hints : Area of 6 circles = $6 \times 100 \pi = 600 \pi \text{ cm}^2$)

6. A right curcular cone has a radius of 7 cm and a height of 24 cm. Find the area of the sheet required to make 7 such cones.

(A) 3846.5 cm^2 (B) 1052 cm^2 (C) 1153.4 cm^2 (D) 3172 cm^2

(Hints : Slant height = $\sqrt{h^2 + r^2}$)

7. A well of depth 25 m with a radius 4 m is dug from the earth forming a platform of length 28 m and a breadth of 16 m. Find the height of the platform.

(A) 2.8 m^3 (B) 5 m^3 (C) 5.4 m^3 (D) 7.2 m^3

(Hints : Volume of the well = volume of the platform)

LA Type :

8. A hemispherical bowl of internal diameter 36 cm contains liquid. This liquid is filled into 72 cylindrical bottles of diameter 6 cm. Find he height of each bottle, if 10% liquid is wasted in this transfer.

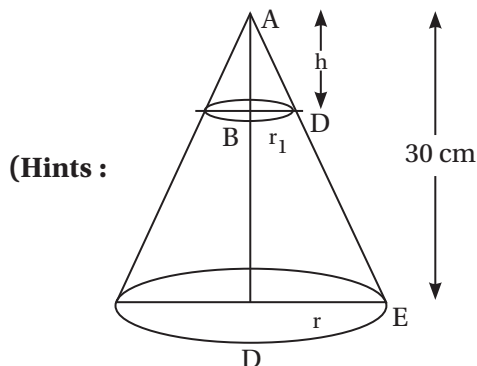
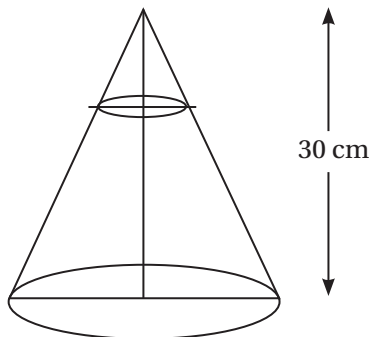
(Hints : The volume of 72 cylindrical bottles = 90% of the volume in the bowl)

9. A cylindrical tub, whose diameter is 12 cm and height 15 cm is full of ice-cream. The whole ice-cream is to be divided into 10 children in equal ice-cream cones, with conical base surmounted by hemispherical top. If the height of conical portion is twice the diameter of base, find the diameter of conical part of ice-cream cone.

(Hints : Volume of 1 ice cream cone = $\frac{1}{3} \times \pi r^2 h + \frac{2}{3} \pi r^3$)

Volume of 10 ice cream cones = Volume of cylinder

10. In figure, shown a right circular cone of height 30 cm. A small cone is cut off from the top by a plane parallel to the base. If the volume of the small cone is $\frac{1}{27}$ of the volume of given cone, find at what height above the base is the section made.



$$h = \frac{30r_1}{r}, \frac{\text{Volume of small cone}}{\text{Volume of large cone}} = \frac{1}{27})$$

11. 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 making of toy is $166\frac{5}{6} \text{ cm}^3$. Find the height of the toy. Also, find the cost of painting the hemispherical part of the toy at the rate of ₹ 10 per cm^2 .

(Hints : Volume of toy = Volume of cone + Volume of hemisphere)

12. 504 cones, each of diameter 3.5 cm and height 3 cm, are melted and recast into a metallic sphere. Find the diameter of the sphere and hence find its surface area.

(Hints : Volume of the sphere = volume of 504 cones)

13. Two spheres of same metal weigh 1 kg and 7kg. The radius of the smaller sphere is 3 cm. The two spheres are melted to form a single big sphere. Find the diameter of the new sphere.

(Hints : Volume of 7 kg sphere = 7 times volume of 1 kg sphere)

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|-------------------|----------------------------------|
| 1. (B) | 5. (D) |
| 2. (A) | 6. (A) |
| 3. (D) | 7. (A) |
| 4. (B) | |
| 8. 5.4 cm | 12. 21 cm , 1386 cm ² |
| 9. 6 cm | 13. 12 cm |
| 10. 20 cm | |
| 11. 9.5 cm, ₹ 770 | |

