

CLASS TEST
CLASS: IX
CHAPTER 11: SURFACE AREA AND VOLUME

MAXIMUM MARKS: 15

TIME: 40 MINUTES

A. Choose the correct option: [1 x 3 =3]

1. The radius of a hemispherical balloon increases from 6 cm to 12 cm as air is being pumped into it. The ratio of the surface areas of the balloon in two cases is
(a) 1:4 (b) 1:3 (c) 2:3 (d) 2:1
2. If the diameter of the base of a cone is 10 cm and height is 12 cm, then its curved surface area is –
(a) $60\pi \text{ cm}^2$ (b) $65\pi \text{ cm}^2$ (c) $90\pi \text{ cm}^2$ (d) $120\pi \text{ cm}^2$
3. If a diameter of a sphere is increased by 20% , then its radius increases by –
(a) 5% (b) 10% (c) 20% (d) 40%

B. Assertion-Reason Type Questions: [1 x 2=2]

1. Assertion(A): The radius of a sphere where surface area is 154 cm^2 , is 3.5 cm.
Reason (R): Volume of a sphere is $4\pi r^3$ cubic unit.
2. Assertion(A): Volume of two spheres are in the ratio 8: 27, therefore the surface area of the spheres are in ratio 4: 3 .
Reason (R): The surface area of a sphere is $4\pi r^2$ square unit.

C. SAQ: [3 × 2 = 6]

1. An edge of a cube measures 21 cm. Find the volume of the largest possible right circular cone removed from the cube.
2. Twenty seven solid iron spheres , each of radius r and surface area S are melted to form a sphere with surface area S' . Find the –
(i) Radius r' of the new sphere (ii) Ratio of S and S'

D. CASE STUDY [2+2=4]

Mathematics teacher of a school took his 10th standard students to show Taj Mahal. It was a part of their Educational trip. The teacher had interest in history as well. He narrated the facts of Taj Mahal to the students. Then the teacher said in this monument one can find combination of solid figures. There are 4 pillars which are cylindrical in shape. Also, 2 domes at the back side which are hemispherical. One big dome at the centre. It is the finest example of the symmetry. (Use $\pi = 22/7$)

- (i) How much cloth material will be required to cover 2 small domes each of radius 4.2 metres?)
- (ii) What is the lateral surface area of all 4 pillars if height of the each pillar is 14 m and base radius is 1.4 m (without dome)?

