CHAPTER TEST: SURFACE AREAS AND VOLUMES

Mathematics | Class IX (2026/SAV/09/NCERT/001)

Time: 1.5 Hours   **Max. Marks: 33**

GENERAL INSTRUCTIONS

– All questions are compulsory.

– Section A: 5 MCQs (1 mark each).

– Section B: 4 Short Answer Questions (2 marks each).

– Section C: 4 Long Answer Questions (4 marks each).

– Section D: 4 Objective/NCERT Highlight Questions (1 mark each).

Section A: Multiple Choice Questions (1 Mark Each)

1. The radius of a sphere is $2r$, then its volume will be:
   (a) $\frac{4}{3}\pi r^3$ (b) $4\pi r^3$ (c) $\frac{8\pi r^3}{3}$ (d) $\frac{32}{3}\pi r^3$

2. The total surface area of a cone whose radius is $\frac{r}{2}$ and slant height $2l$ is:
   (a) $2\pi r(l + r)$ (b) $\pi r(l + \frac{r}{4})$ (c) $\pi r(l + r)$ (d) $2\pi rl$

3. If the radius of a cylinder is doubled and height is halved, the curved surface area will be:
   (a) Halved   (b) Doubled   (c) Same   (d) Four times

4. The lateral surface area of a cube is $256\,\text{cm}^2$. The volume of the cube is:
   (a) $512\,\text{cm}^3$ (b) $64\,\text{cm}^3$ (c) $216\,\text{cm}^3$ (d) $256\,\text{cm}^3$

5. A right circular cylinder just encloses a sphere of radius r. The ratio of the surface area of the sphere to the curved surface area of the cylinder is:
   (a) $1 : 1$ (b) $1 : 2$ (c) $2 : 1$ (d) $1 : 4$

Section B: Short Answer Questions (2 Marks Each)

6. Find the total surface area of a hemisphere of radius 10 cm. (Use $\pi = 3.14$)

7. A corn cob, shaped somewhat like a cone, has the radius of its broadest end as 2.1 cm and length (height) as 20 cm. If each $1\,\text{cm}^2$ of the surface of the cob carries an average of 4 grains, find how many grains you would find on the entire cob.

8. The volume of a sphere is $38808\,\text{cm}^3$. Find its radius and hence its surface area.

9. A lead shot a diameter 3 cm is melted and recast into a right circular cone of height 3 cm. Find the radius of the base of the cone.

Section C: Long Answer Questions (4 Marks Each)

10. A hemispherical tank is made up of an iron sheet 1 cm thick. If the inner radius is 1 m, then find the volume of the iron used to make the tank.

11. A villager Itwari has a plot of land of the shape of a quadrilateral. He decided to give some portion of his plot to the Gram Panchayat to construct a Health Centre. A cylindrical tank of radius 7 m and height 10 m is to be built. Find the cost of painting its inner curved surface at Rs 4 per m^2. If the tank is to be filled with water, find its capacity in litres.

12. A right triangle with sides 3 cm, 4 cm and 5 cm is revolved about the side 3 cm and then about the side 4 cm. Find the difference in volumes of the two cones so formed.

13. A storage tank is in the form of a cube. When it is full of water, the volume of water is $15.625 \, m^3$. If the present depth of water is 1.3 m, find the volume of water already used from the tank.

Section D: NCERT Important Highlights (1 Mark Each)

1. The ratio of the volume of a cone to the volume of a cylinder having the same radius and height is _____.

2. The length of the longest pole that can be put in a room of dimensions l, b, h is _____.

3. If the radius of a sphere is tripled, its surface area becomes _____ times.

4. $1 \, m^3$ is equal to _____ litres.

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