Mathematics

Practice Test Paper 1

(Chapter 12: Surface Areas and Volumes)

Class X | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

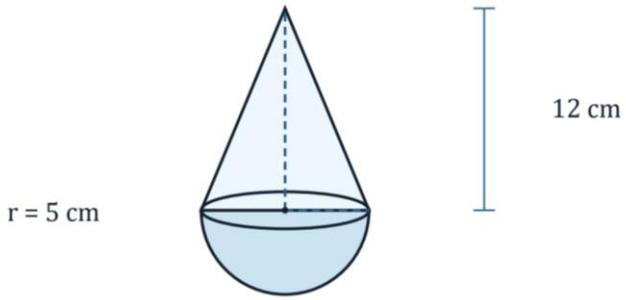
General Instructions

1. All 13 questions are compulsory. The paper has four sections: A, B, C and D.
2. Section A - 5 marks; Section B - 8 marks; Section C - 9 marks; Section D - 3 marks.
3. Choose one correct option in Section A. Show the necessary steps and reasoning in Sections B, C and D.
4. Use π = 22/7 unless stated otherwise. Use of calculators is not allowed.

SECTION A

(5 questions × 1 mark = 5 marks)

1. The toy shown consists of a cone joined to a hemisphere. Its total height is:



(A) 12 cm (B) 17 cm

(C) 22 cm (D) 10 cm

2. Two equal cubes are joined along one complete face each. How many square faces of the original cubes remain exposed?

(A) 12 (B) 11

(C) 10 (D) 8

3. A cone and a cylinder have the same base and height. The fraction of the cylinder volume left after removing the cone is:

(A) $\frac{1}{3}$ (B) $\frac{1}{2}$

(C) $\frac{2}{3}$ (D) $\frac{3}{4}$

4. The surface shared by a cone and a hemisphere of common radius r contributes how much to the exterior area?

(A) 0 (B) πr^2

(C) $2\pi r^2$ (D) $3\pi r^2$

5. A hemisphere of radius 3 cm is attached to a solid cube. Its contribution to the combined volume is:

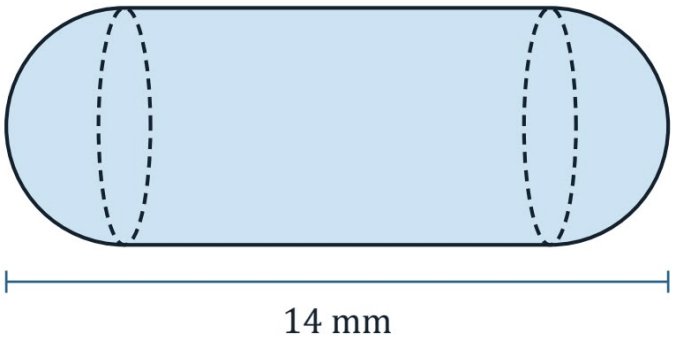
(A) $9\pi\ cm^3$ (B) $12\pi\ cm^3$

(C) $27\pi\ cm^3$ (D) $18\pi\ cm^3$

SECTION B

(4 questions × 2 marks = 8 marks)

6. The capsule shown has total length 14 mm and diameter 5 mm. Find its external surface area.



7. Two cubes, each of volume $64\ cm^3$, are joined face to face. Find the surface area of the resulting cuboid.

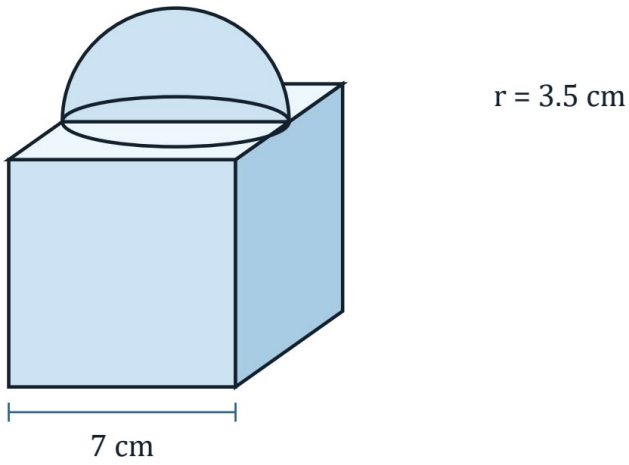
8. An open vessel has a cylindrical part of height 6 cm and a hemispherical bottom of radius 7 cm. Find its inner surface area. Ignore thickness.

9. A cone of radius 3 cm and height 4 cm stands on a hemisphere of radius 3 cm. Find the volume of the solid in terms of π.

SECTION C

(3 questions × 3 marks = 9 marks)

10. A cube of edge 7 cm is surmounted by the largest hemisphere that fits on its top face, as shown. Find the external surface area, including the bottom.



11. A closed solid consists of a cylinder of radius 3 cm and height 8 cm with a cone of height 4 cm on top. Find its total external surface area in terms of π.

12. A glass has an internal cylindrical radius of 3 cm and height 10 cm. A solid hemispherical bulge of radius 3 cm rises from its bottom. Find the actual capacity in terms of π.

SECTION D

(Application Based Question - 3 marks)

13. A tent has a cylindrical wall of radius 7 m and height 3 m, topped by a cone of slant height 9 m. It has no floor. Canvas costs Rs 50 per m^2. Ignore seams and openings.

(i) Find the area of canvas for the cylindrical wall.

(ii) Find the area of canvas for the conical roof.

(iii) Find the total cost of canvas.