Mathematics

Practice Test Paper 7

(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.

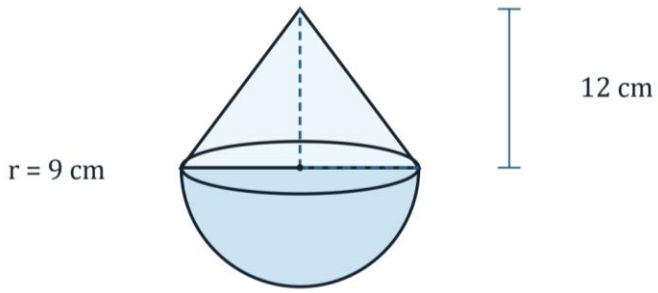
SECTION A

(5 questions × 1 mark = 5 marks)

1. Every linear dimension of a combined solid is tripled. Its exterior area becomes:

(A) 3 times
(B) 6 times
(C) 9 times
(D) 27 times

2. The cone joined to the hemisphere shown has radius 9 cm and height 12 cm. Its slant height is:



(A) 21 cm
(B) 15 cm
(C) 18 cm
(D) 12 cm

3. A cone of height r and a hemisphere of radius r share their circular bases. The combined volume is:

(A) πr^3
(B) $2\pi r^3$
(C) $\frac{\pi r^3}{3}$
(D) $\frac{4\pi r^3}{3}$

4. A cone on a cylinder has radius 3 cm and slant height 5 cm. Only its curved conical surface is painted red. The red area is:

(A) 9π cm^2
(B) 24π cm^2
(C) 30π cm^2
(D) 15π cm^2

5. A hemispherical cavity is made in a solid cube. Which quantity necessarily decreases?

(A) Total surface area (B) Volume of material

(C) Number of curved surfaces (D) Area of curved surfaces

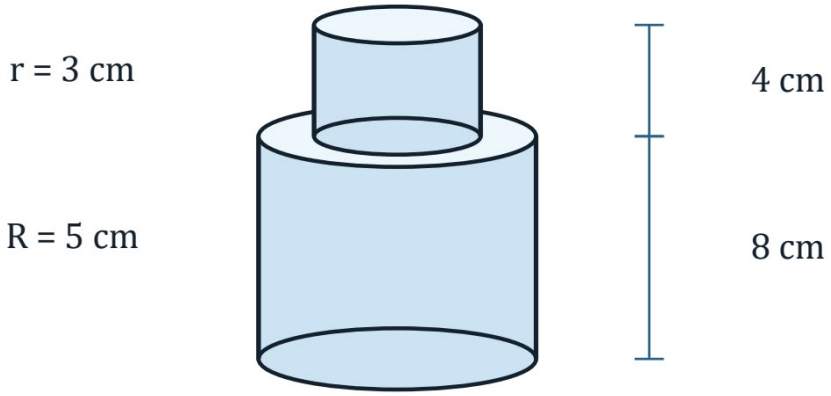
SECTION B

(4 questions × 2 marks = 8 marks)

6. An open vessel has a cylindrical part of height 8 cm and a hemispherical bottom of radius 4 cm. Find the total internal curved area in terms of π. Ignore thickness.

7. Two cuboids, each 6 cm × 4 cm × 3 cm, are joined along their 4 cm × 3 cm faces. Find the total external area.

8. The closed stepped cylinder shown has lower radius 5 cm and height 8 cm, and upper radius 3 cm and height 4 cm. Find its total external area in terms of π.

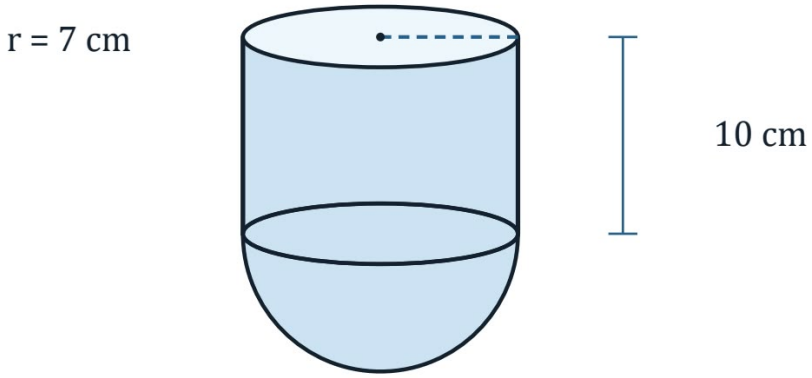


9. A cone and a hemisphere have common radius 3 cm. Their combined volume is 45π cm^3. Find the cone height.

SECTION C

(3 questions × 3 marks = 9 marks)

10. The open container shown has radius 7 cm, cylindrical height 10 cm and a hemispherical bottom. Find its capacity and its inner surface area.



11. A medicine capsule has total length 16 mm and radius 2 mm. Find its volume in terms of π. If 75% of that volume is medicine, find the medicine volume in terms of π.

12. A solid cylinder of radius 4 cm and height 9 cm is topped by a hemisphere of radius 4 cm. Using π = 3.14, find its mass if each cubic centimetre has mass 3 g. Give the answer to the nearest gram.

SECTION D

(Application Based Question - 3 marks)

13. A craftsman makes a toy by joining a cone of radius 12 cm and height 16 cm to a hemisphere of radius 12 cm. Only the curved conical part is painted blue. Give its painted area in terms of π.

(i) Find the total toy height.

(ii) Find the cone slant height.

(iii) Find the blue area.