Mathematics — Ganita Manjari

Chapter 14 Test 1

Math of Space: Surface Area and Volume

Class IX | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. Choose one option in A; show working in B–D.
2. No calculators. Leave π exact unless stated. Ignore thickness unless specified.
3. Figures are not to scale; cones and cylinders are right circular.

SECTION A

(5 questions × 1 mark = 5 marks)

1. Which unit is suitable for the volume of a small solid?

(A) mm
(B) mm^2
(C) mm^3
(D) mm^{-1}

2. A cube has edge 5 cm. What is its total surface area?

(A) 25 cm^2
(B) 150 cm^2
(C) 125 cm^2
(D) 100 cm^2

3. A plane cuts a right circular cylinder parallel to its axis and through its interior. What shape is the cross-section?

(A) Rectangle
(B) Circle
(C) Triangle
(D) Sphere

4. For a right cone with radius r, height h and slant height l, which relation is correct?

(A) $l = h + r$
(B) $h^2 = l^2 + r^2$
(C) $r^2 = h^2 + l^2$
(D) $l^2 = h^2 + r^2$

5. Which solid has a curved surface but no flat face?

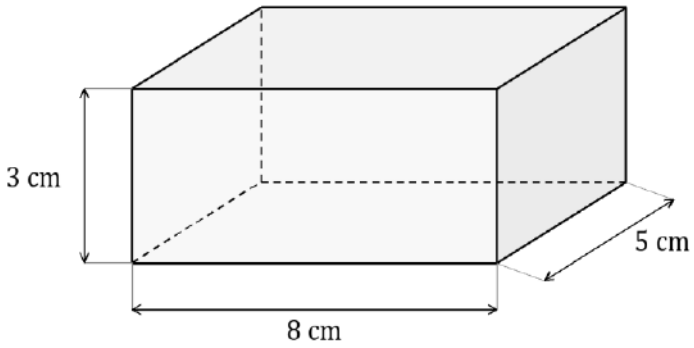
(A) Cone
(B) Hemisphere
(C) Sphere
(D) Cylinder

SECTION B

(4 questions × 2 marks = 8 marks)

6. A cuboid has volume 864 cm^3, length 12 cm and width 8 cm. Find its height.

7. Find the total surface area of the cuboid in figure.



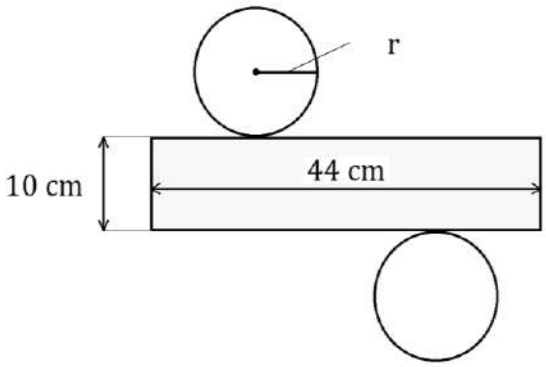
8. A box has internal dimensions 30 cm × 20 cm × 15 cm. Find its capacity in litres.

9. A cylindrical label covers only the curved surface of a jar of radius 2 cm and height 10 cm. Find its area.

SECTION C

(3 questions × 3 marks = 9 marks)

10. The net in figure forms a closed cylinder. Find its radius and volume. Use $\pi = \frac{22}{7}$.



11. A room is 8 m long, 6 m wide and 3 m high. Its four walls include 5 m^2 of openings. Find the painting cost at ₹20/m^2.

12. Three faces meeting at a cuboid's corner have areas 12 cm^2, 18 cm^2 and 24 cm^2. Find its volume and total surface area.

SECTION D

(1 application question × 3 marks = 3 marks)

13. An aquarium has internal base 60 cm × 30 cm and water depth 20 cm. After adding 9 litres, find the water volume and new depth. No water overflows.