# UDAAN 2024

## Surface Areas and Volumes

**DHA-02**

**1.** The volume of a cube is 2744 $cm^3$. Its surface area is:

(A) 196 $cm^2$ (B) 1176 $cm^2$

(C) 784 $cm^2$ (D) 588 $cm^2$

**2.** The lateral surface area of a cylinder is 176 $cm^2$ and base area 38.5 $cm^2$. The volume of the cylinder is:

(A) 308 $cm^3$ (B) 830 $cm^3$

(C) 803 $cm^3$ (D) None of these

**3.** The volume of the greatest sphere that can be cut off from a cylindrical log of wood of base radius 1 cm and height 5 cm is:

(A) $\frac{4}{3}\pi$ $cm^3$ (B) $\frac{10}{3}\pi$ $cm^3$

(C) $5\pi$ $cm^3$ (D) $\frac{20}{3}\pi$ $cm^3$

**4.** A toy is in the form of a cone mounted on a hemisphere of radius 7 cm. The total height of the toy is 14.5 cm. Find the volume of the toy.

(Take $\pi = 22/7$)

(A) $\frac{539}{6}$ $cm^3$ (B) $\frac{3311}{3}$ $cm^3$

(C) $\frac{847}{6}$ $cm^3$ (D) 200 $cm^3$

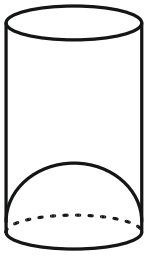
**5.** A mason constructs a wall of dimensions 270 cm × 300 cm × 350 cm with the bricks each of size 22.5 cm × 11.25 cm × 8.75 cm and it is assumed that 1/8 of the wall is covered by the mortar. The number of bricks used to construct the wall is:

(A) 11,100 (B) 11,200

(C) 11,000 (D) 11,300

**6.** A juice seller was serving his customers using glasses as shown in figure. The inner diameter of the cylindrical glass was 5 cm, but the bottom of the glass had a hemispherical raised portion which reduced the capacity of the glass. If the height of a glass was 10 cm, find the actual capacity of the glass.

(Use $\pi = 3.14$)



(A) 32.71 $cm^3$ (B) 196.25 $cm^3$

(C) 163.54 $cm^3$ (D) 129 $cm^3$

**7.** Water flows at the rate of 10 metre per minute from a cylindrical pipe 5 mm in diameter. How long will it take to fill up a conical vessel whose diameter at the base is 40 cm and depth 24 cm?

(A) 48 minutes 15 secs. (B) 51 minutes 12 secs.

(C) 52 minutes 1 sec. (D) 55 minutes

**8.** In a swimming pool, base measuring 90 m × 40 m, 150 men take a dip. If the average displacement of water by a man is 8 $m^3$, then rise in water level is:

(A) 27.33 cm (B) 30 cm

(C) 31.33 cm (D) 33.33 cm

**9.** The areas of three adjacent faces of a rectangular block are in the ratio of 2 : 3 : 4 and its volume is 9000 cu. cm, then the length of the shortest side is:

(A) 10 cm (B) 12 cm

(C) 15 cm (D) 18 cm

**10.** A farmer connects a pipe of internal diameter 20 cm from a canal into a cylindrical tank which is 10 m in diameter and 2 m deep. If the water flows through the pipe at the rate of 4 km per hour, in how much time will the tank be filled completely?

(A) $\frac{1}{4}$ hour (B) $\frac{3}{4}$ hour

(C) $\frac{1}{2}$ hour (D) $1\frac{1}{4}$ hour

**Note: Kindly find the Video Solution of DHAs Questions in the DPP Section.**

# Answer Key

| | | | |
|---|---|---|---|
| **1.** | (B) | **6.** | (C) |
| **2.** | (A) | **7.** | (B) |
| **3.** | (A) | **8.** | (D) |
| **4.** | (B) | **9.** | (C) |
| **5.** | (B) | **10.** | (D) |

# Hints and Solutions

**1.** (B) 1176 $cm^2$

**2.** (A) 308 $cm^3$

**3.** (A) $\frac{4}{3}\pi$ $cm^3$

**4.** (B) $\frac{3311}{3}$ $cm^3$

**5.** (B) 11,200

**6.** (C) 163.54 $cm^3$

**7.** (B) 51 minutes 12 secs.

**8.** (D) 33.33 cm

**9.** (C) 15 cm

**10.** (D) $1\frac{1}{4}$ hours

**PW Web/App -** https://smart.link/7wwosivoicgd4
**Library-** https://smart.link/sdfez8ejd80if