

JEE MAIN MECHANICAL PROPERTIES OF FLUIDS — BUOYANCY AND ARCHIMEDES' PRINCIPLE — PYQS

Max. Marks: 16
Questions: 4

Section A (MCQ) — 2 questions

- Q.1** A cubical block of density $\rho_b = 600 \text{ kg/m}^3$ floats in a liquid of density $\rho_l = 900 \text{ kg/m}^3$. If the height of block is $H = 8.0 \text{ cm}$, then height of the submerged part is _____ cm.

[JEE Main 2026 (Online) 24th January Evening Shift]

- (1) 6.3 (2) 4.3 (3) 7.3 (4) 5.3

Scan or tap for the full solution



- Q.2** A 400 g solid cube having an edge of length 10 cm floats in water. How much volume of the cube is outside the water?

(Given: density of water = 1000 kg m^{-3})

[JEE Main 2025 (Online) 28th January Evening Shift]

- (1) 400 cm^3 (2) 600 cm^3
(3) 1400 cm^3 (4) 4000 cm^3

Scan or tap for the full solution



Section B (Numerical) — 2 questions

- Q.3** A tub is filled with water and a wooden cube $10 \text{ cm} \times 10 \text{ cm} \times 10 \text{ cm}$ is placed in the water. The wooden cube is found to float on the water with a part of it submerged in water. When a metal coin is placed on the wooden cube, the submerged part is increased by 3.87 cm. The mass of the metal coin is _____ gram.

(Take water density as 1 g/cm^3 and density of wood as 0.4 g/cm^3)

[JEE Main 2026 (Online) 2nd April Morning Shift]

Scan or tap for the full solution



- Q.4** A cube having a side of 10 cm with unknown mass and 200 gm mass were hung at two ends of a uniform rigid rod of 27 cm long. The rod along with masses was placed on a wedge keeping the distance between wedge point and 200 gm weight as 25 cm. Initially the masses were not at balance. A beaker is placed beneath the unknown mass and water is added slowly to it. At given point the masses were in balance and half volume of the unknown mass was inside the water.

(Take the density of unknown mass is more than that of the water, the mass did not absorb water and water density is 1 gm/cm^3 .)

The unknown mass is _____ kg.

[JEE Main 2025 (Online) 8th April Evening Shift]

Scan or tap for the full solution



ANSWER KEY

Section A (MCQ) — 2 questions

Ques.	1	2									
Ans.	4	2									

Section B (Numerical) — 2 questions

Ques.	3	4						
Ans.	387	3						