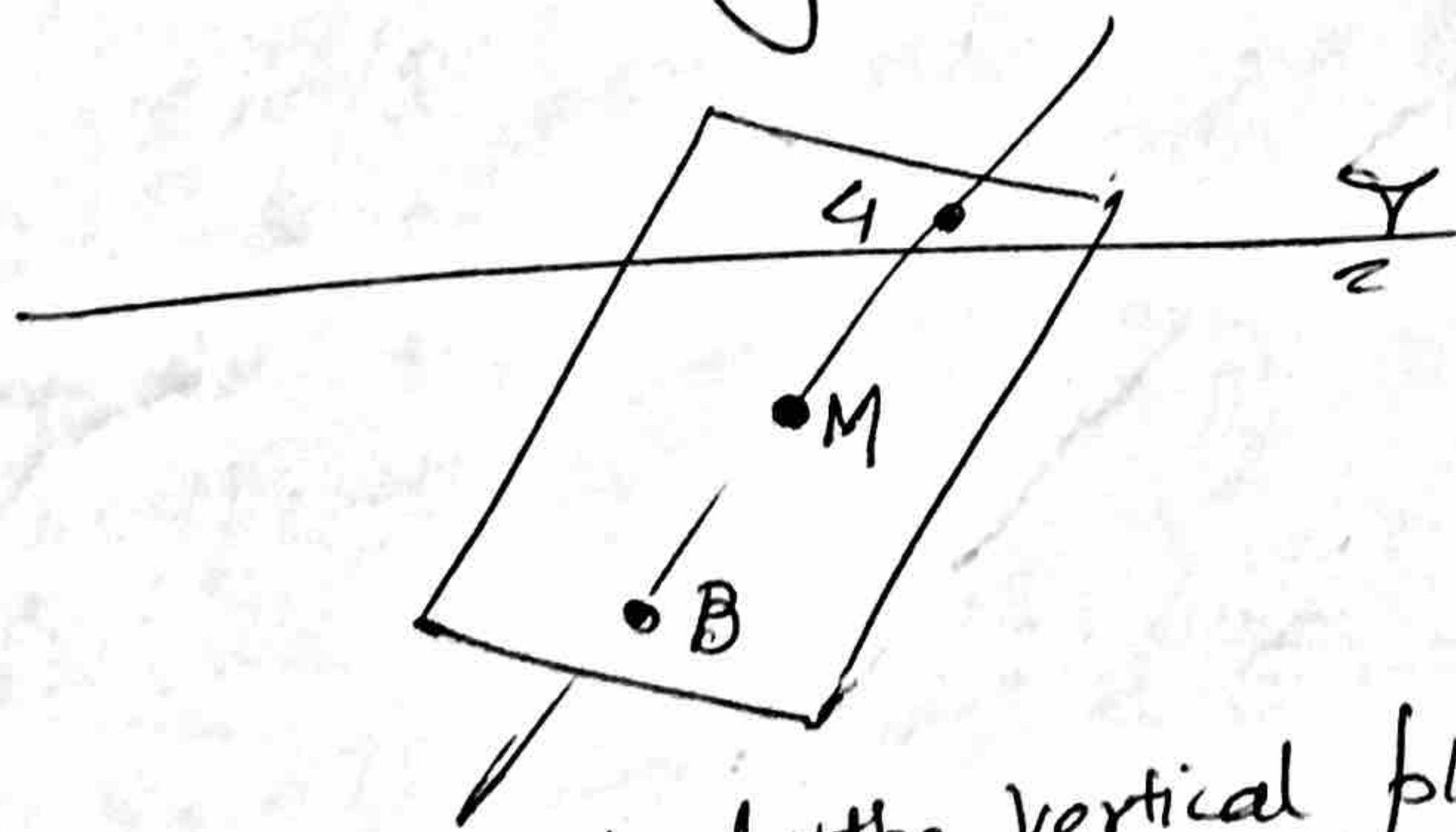


Fluid Mechanics (IES PRE 2018)

FLUID STATICS

Q1 \Rightarrow A verticle Square area $1\text{ m} \times 1\text{ m}$ is submerged in water with upper edge 0.5 m below the water surface. Locate the horizontal line on the surface of square such that the force on upper portion equals that in lower portion. Calculate the distance of that line from the free surface.

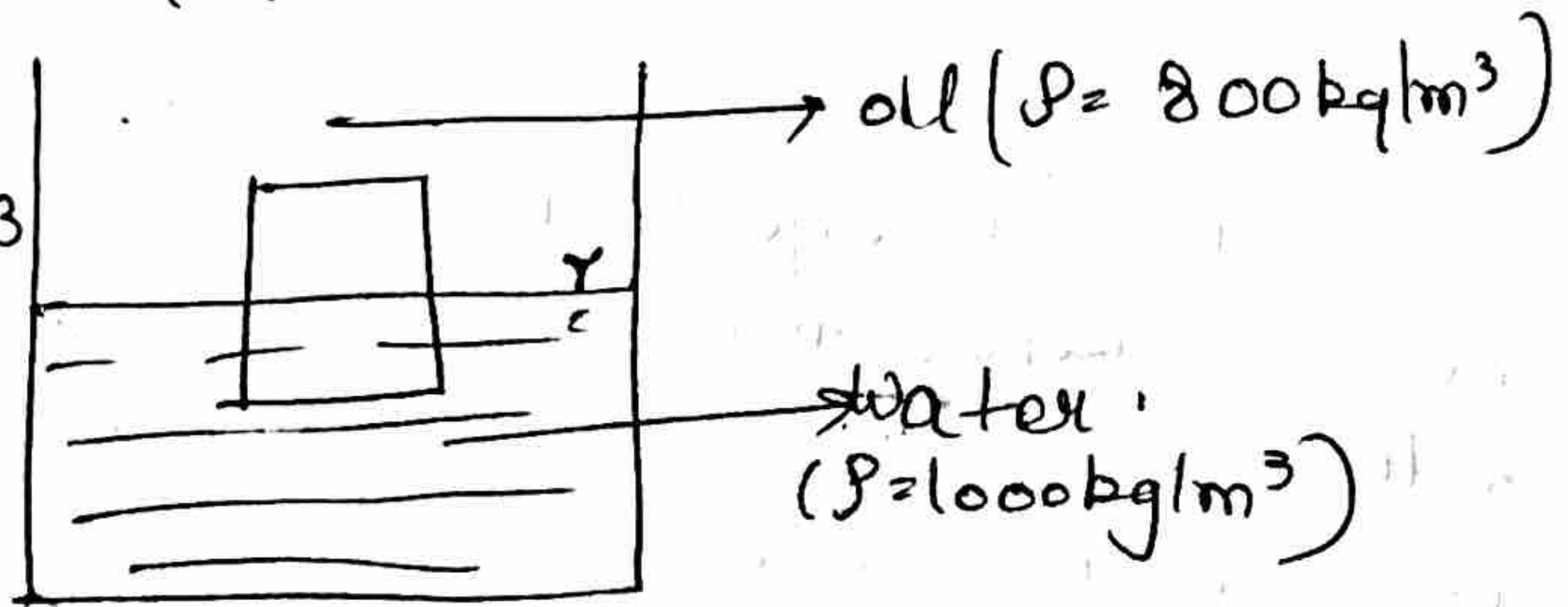
Q2 \Rightarrow A body is floating as shown in the given figure. The centre of buoyancy, centre of gravity and metacentre are labelled and represented as B , G & M . The body is \rightarrow (a) Vertically Stable (b) Vertically Stable (c) Rotationally Stable (d) Rotationally Unstable.



NOTE \Rightarrow When the depth of the vertical plane surface increases for the submerged body, then the location of centre of pressure comes closer to the centre of gravity.

Q: For the floating body shown in the figure, calculate the percentage of block present inside water and in oil.

Density of
body $\Rightarrow 870 \text{ kg/m}^3$



Q: The solid cylinder of length L , diameter D and specific gravity 0.6 floats in water under stable Eqbm, with its axis vertical. What's the ratio $\frac{L}{D} = ?$

- (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{2\sqrt{3}}{5}$ (c) $\frac{4}{5\sqrt{3}}$ (d) $\frac{5}{4\sqrt{3}}$