

Topic 1 Density

Past Paper Questions

Q1. A hollow shaft of 3m long has an outside diameter 108mm and inside diameter of 72mm. Calculate the mass of the shaft given density is 7600 kg/m^3 . -5m

Q2. A 3m long solid steel with density 7600 kg/m^3 has a mass of 108.5 kg. Calculate its diameter. -4m

Q3. Two rectangular pieces of pine each having dimension 200mm long with section 25mmX50mm. A lap joint is formed and secured using 4 oak pegs 10mm in diameter and 50mm in length as shown in the fig. Calculate mass of the Assembly. (Take $\rho_{\text{pine}} = 500 \text{ kg/m}^3$, $\rho_{\text{oak}} = 800 \text{ kg/m}^3$) -6m



Q4. An open rectangular tank has dimension 0.8m long X 0.4m wide X 0.5m deep. It is made up of steel 4mm thick. The tank contains kerosene to a depth of 0.35m. Given $\rho_{\text{steel}} = 7600 \text{ kg/m}^3$ and the total mass of the tank and content is 138kg. Calculate

- Area of steel sheet required -3m
- The mass of the steel -3m
- The mass of kerosene -1m
- The density of kerosene -3m

Q5. A pine plank with dimension 4mX300mmX40mm has mass of 26.4 kg. Calculate its density -4m

Q6. Two planks similar to one in Q5 are bolted together using 8 steel bolts each of mass 0.3 kg. The 8 holes drilled in each plank are 25mm in diameter. Calculate total mass of assembly -6m