

SAMPLE

CIVE1400: Fluid Mechanics. MCQ Test questions: Properties of Fluids and Statics

Name:	Date:
Tutor	Signature:

These answer assumes the following: Gravitational acceleration, $g = 9.81 \text{ m/s}^2$
Mass density of water, $\rho = 1000 \text{ kg/m}^3$

1. If 5.6 m^3 of oil weighs $46\,800 \text{ N}$, what is the mass density in kg/m^3 ?

- a) 1.2×10^{-4} b) 852.0 c) 8357.1 d) 8.52 e) 8.36
- a b c d e

2. What is the relative density of the oil in question 1?

- a) 0.852 b) 83.57 c) 8357.1 d) 8.36 e) 1.2×10^{-4}
- a b c d e

3. A fluid has absolute viscosity, μ , of 0.048 Pa s . If at point A, 75 mm from the wall the velocity is measured as 1.125 m/s , calculate the intensity of shear stress at point B 50 mm from the wall in N/m^2 . Assume a linear (straight line) velocity distribution from the wall.

- a) 15 b) 0.048 c) 0.72 d) 0.0032 e) 0.032
- a b c d e

4. Determine the *absolute* pressure in Pa at a depth of 6 m below the free surface of a tank of water when a barometer reads 760 mm mercury (relative density 13.57)

- a) 101172 b) 58860 c) 160 032 d) 82.42 e) 160.032
- a b c d e

5. Determine the pressure in *bar* at a depth of 10 m in oil of relative density 0.750.

- a) 735575 b) 0.736 c) 735575×10^5 d) 73.575 e) 98100
- a b c d e

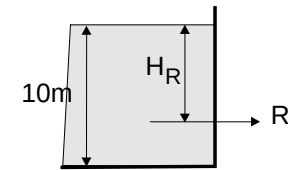
6. What depth of oil (in m), relative density 0.75, will give a gauge pressure of 275000 Pa

- a) 37.38 b) 367 c) 0.027 d) 20.2×10^4 e) 28.03
- a b c d e

7. Express the pressure head of 15 m of water in metres of oil of relative density 0.75

- a) 110.36 b) 11.25 c) 11 250 d) 15.0 e) 20.0
- a b c d e

8. A square tank with sides 5 m long and vertical walls contains water to depth of 10 m , as shown. What is the depth, H_R , in meters to the point of action of the resultant force, R , due to the liquid?



- a) 5.0 b) 6.67 c) 3.33 d) 2.0 e) 10.0
- a b c d e

9. What is the magnitude of the resultant force, R , in Newton's per metre in the previous question?

- a) 654 000 b) 981 000 c) 98 100 d) 49 050 e) 490 500
- a b c d e