

Practical Discussion Problems (9)

Applications to Oscillation, Energy and Momentum

Q1:

You dive deep down into the water. Does it matter whether it is in the ocean or a swimming pool? Explain!

- (A) Yes (B) No (C) need more information

Q2:

A block of aluminum (density 3041 kg/m^3) is lifted very slowly but at constant speed from the bottom of a tank filled with water. If it is a cube 20 cm on each side, the tension in the cord is:

- A. 160 N
B. 4 N
C. 80 N
D. 8 N
E. None of the above

Q3:

a. A container is filled with oil 2 m deep and water 7.5 m deep. What is approximately the gage pressure at the bottom of the tank? Take the density of water to be 1000 kg/m^3 , oil to be 870 kg/m^3 .

- (A) 91 Kpa (B) 80 Kpa (C) 56 Kpa (E) 15 Kpa

b. Will the oil or the water be on top in the tank? (these two fluids are immiscible, so they will separate into separate layers if left alone for a sufficient amount of time)

- (A) Yes (B) No (C) need more information

c.. If the bottom of the tank is a circular plate with diameter of 6 m, what is approximately the net fluid force acting on it?

- (A) 3,560 KN (B) 2,560 KN (C) 1,500 KN (D) 560 KN