VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Continuous Assessment Test – II

Programme Name & Branch: Fall-2019-20 (BME)

Course Name & Code: Mechanics of Solids and Fluids (MEE1032)

Slot: F1+TF1

Class Number: 1309

Exam Duration: 90 mins

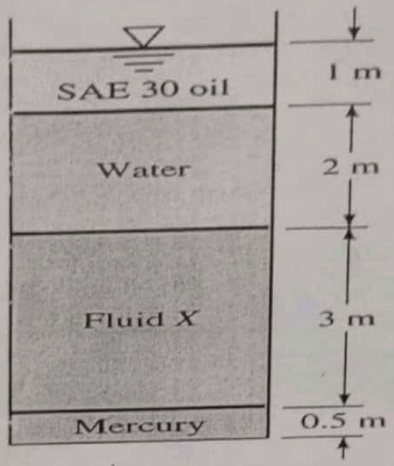
Maximum Marks: 50

Answer all questions.

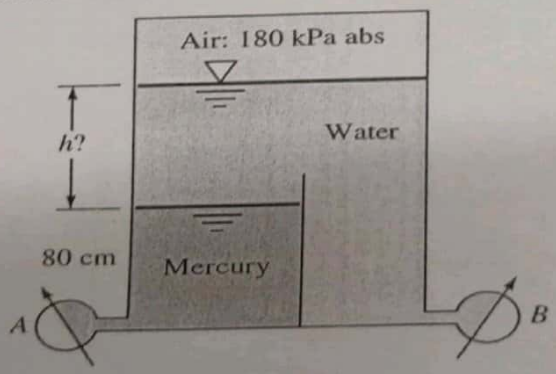
(Assume suitable data, if necessary and give reason for the assumptions)

Section – A (5 ×10 = 50 marks)

1. The system in Fig. is at 20°C. If atmospheric pressure is 101.33 kPa and the pressure at the bottom of the tank is 242 kPa, what is the specific gravity of fluid *X*?



2. At 20°C gage *A* reads 350 kPa absolute. What is the height *h* of the water in cm? What should gage *B* read in kPa absolute?



3. In *Fig. both the tank and the tube are open to the atmosphere.* If L = 2.13 m, what is the angle of tilt *θ of the tube?*

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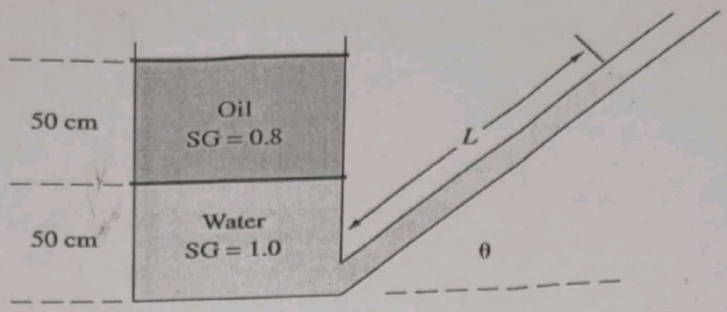
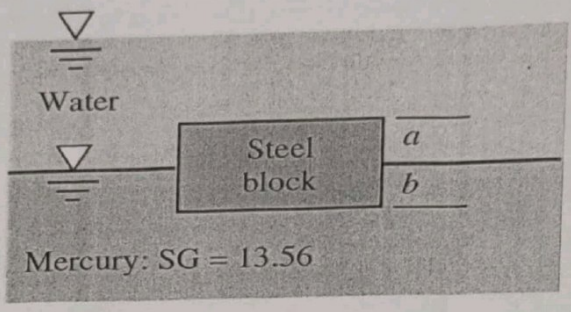
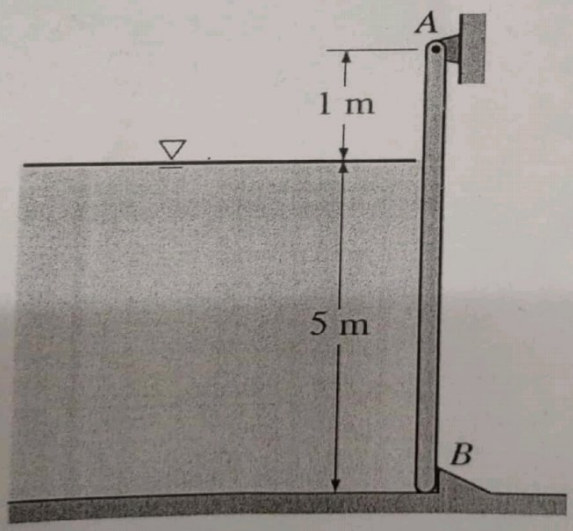


4. A uniform block of steel (SG = 7.85) will "float" at a mercury-water interface as in Fig. What is the ratio of the distances a and b for this condition?



5. A 6-m-high, 5-m-wide rectangular plate blocks the end of a 5-m-deep freshwater channel, as shown in Fig. The plate is hinged about a horizontal axis along its upper edge through a point A and is restrained from opening by a fixed ridge at point B. Determine the force exerted on the plate by the ridge.



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