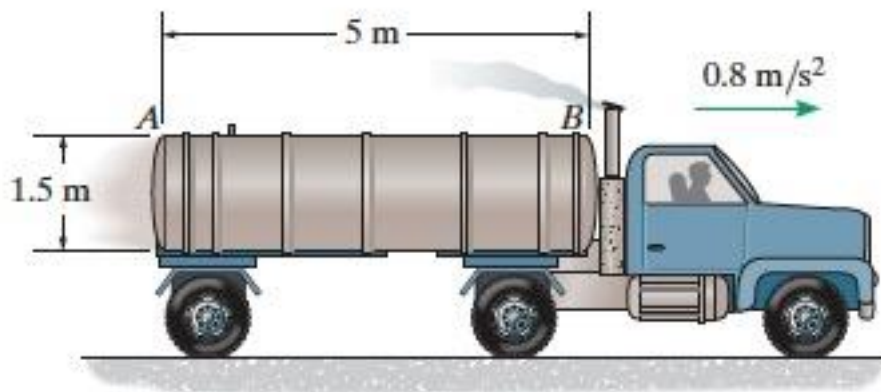


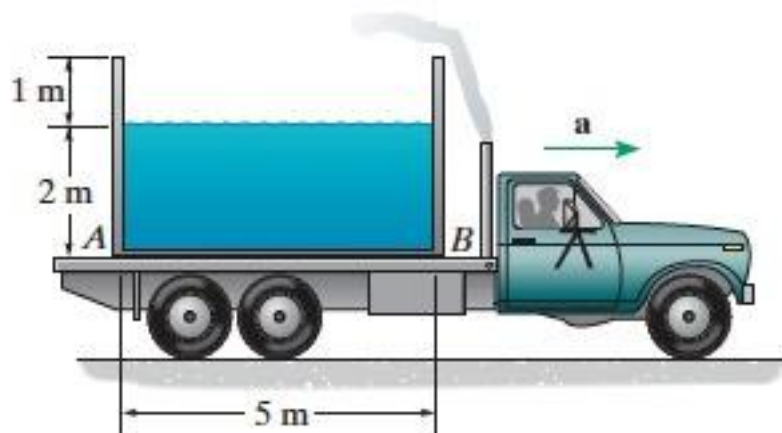
**Homework 2**

Questions No.	1	2	3	4	Total
Score	25%	15%	20%	40%	100%

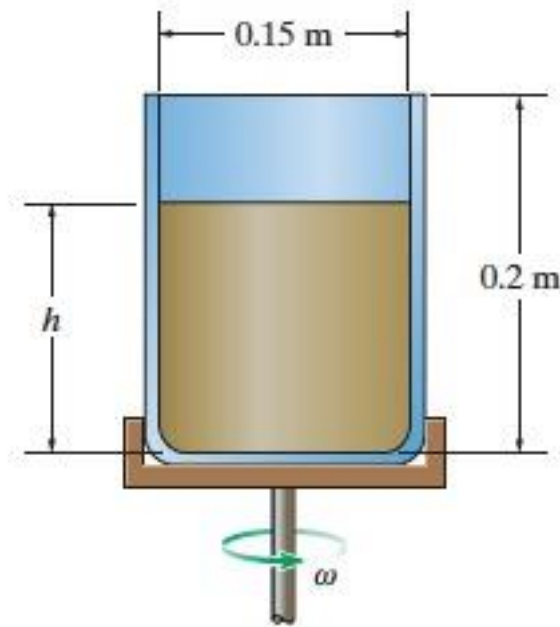
**Q2.1** The closed cylindrical tank is filled with milk, for which  $\rho_m = 1030 \text{ kg/m}^3$ . If the inner diameter of the tank is  $1.5 \text{ m}$ , determine the difference in pressure within the tank between corners A and B when the truck accelerates at  $0.8 \text{ m/s}^2$ .



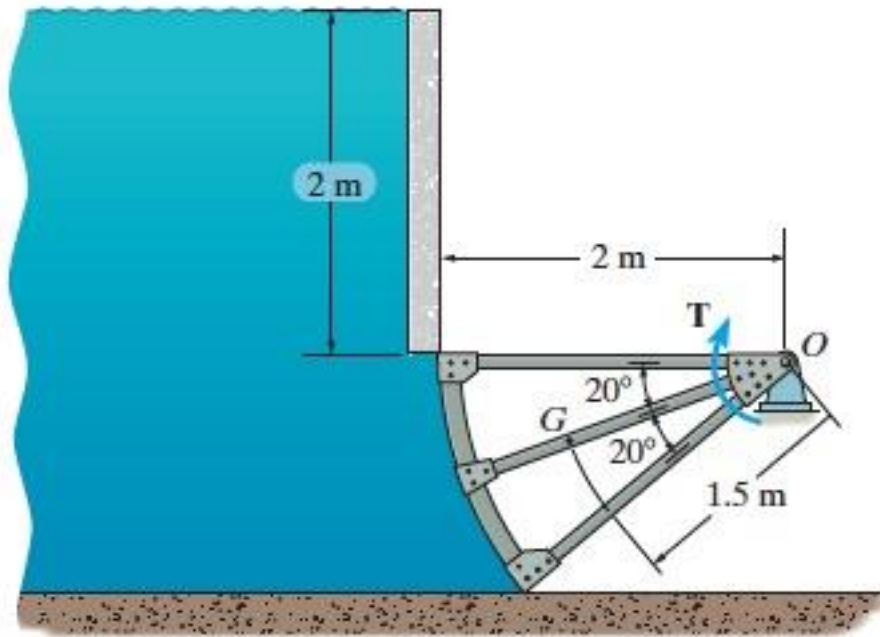
**Q2.2** The truck carries an open container of water as shown. Determine the maximum constant acceleration it can have without causing the water to spill out of the container.



**Q2.3** The beaker is filled to a height of  $h = 0.1 \text{ m}$  with kerosene and placed on the platform. To what height  $h = h'$ , does the kerosene rise against the wall of the beaker when the platform has an angular velocity of  $\omega = 15 \text{ rad/s}$



**Q2.4** The sluice gate for a water channer is  $1.5 \text{ m}$  wide and in the closed position, as shown. **Determine the magnitude of the resultant force of the water acting on the gate.** Solve the problem by considering the fluid acting on the horizontal and vertical projections of the gate. **Determine the smallest torque  $T$  that must be applied to open the gate if its weight is  $30 \text{ kN}$  and its center of gravity is at  $G$ ?**



DDL: 25<sup>th</sup>, March