

GateAssignment9

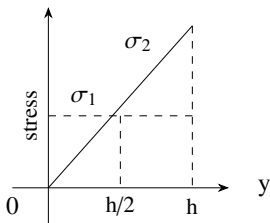
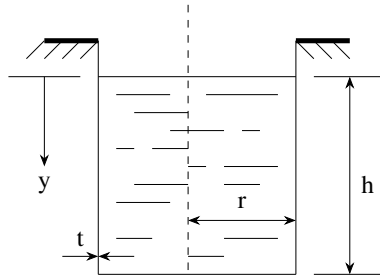
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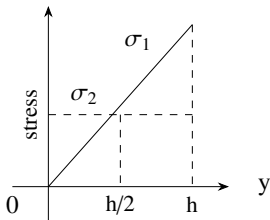
1 Q.36 TO Q.65 CARRY TWO MARKS EACH

- 1) The figure shows a thin-walled open-top cylindrical vessel of radius r and wall thickness t . The vessel is held along the brim and contains a constant-density liquid to height h from the base. Neglect atmospheric pressure, the weight of the vessel and bending stresses in the vessel walls.

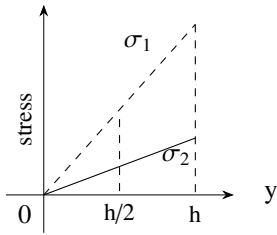
Which one of the plots depicts qualitatively CORRECT dependence of the magnitudes of axial wall stress (σ_1) and circumferential wall stress (σ_2) on y ?



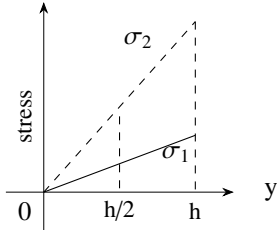
a)



b)



c)



d)

2) Which one of the following statements is FALSE?

- For an ideal gas, the enthalpy is independent of pressure.
- For a real gas going through an adiabatic reversible process, the process equation is given by $PV^\gamma = \text{constant}$, where P is the pressure, V is the volume and γ is the ratio of the specific heats of the gas at constant pressure and constant volume.
- For an ideal gas undergoing a reversible polytropic process $PV^{1.5} = \text{constant}$, the equation connecting the pressure, volume and temperature of the gas at any point along the process is $\frac{P}{R} = \frac{mT}{V}$, where R is the gas constant and m is the mass of the gas.
- Any real gas behaves as an ideal gas at sufficiently low pressure or sufficiently high temperature.