

Question Bank For Mid Term Exam W25

Sr No	Full Question Text	CO
1	What do you mean by thermodynamic equilibrium? Explain in detail.	CO1
2	Explain an Open system, Closed System and Isolated System in Thermodynamics	CO1
3	Explain Zeroth law of thermodynamics stating its application.	CO1
4	Define and explain: (i) Homogenous and Heterogeneous system (ii) Intensive and Extensive properties	CO1
5	Define state, property, cycle, process	CO1
6	Define the terms: (1) Thermodynamics System (2) Property (3) Cycle	CO1
1	Explain PMM of kind I and II.	CO2
2	Derive S.F.E.E. clearly stating assumptions. Reduce it for Boiler.	CO2
3	Derive the steady flow energy equation for (1) Steam Nozzle (2) Turbine	CO2
4	In a gas turbine unit, the gases flow through the turbine is 15 kg/s and the power developed by the turbine is 12000 kW. The enthalpies of gases at the inlet and outlet are 1260 KJ/kg and 400 KJ/kg respectively, and the velocity of gases at the inlet and outlet are 50 m/s and 110 m/s respectively. Calculate: (i) The rate at which heat is rejected to the turbine and (ii) The area of the inlet pipe given that the specific volume of the gases at the inlet is 0.45 m ³ /kg.	CO2
5	Steam enters a nozzle at 7 bar pressure and 20°C (initial enthalpy = 2850 kJ/kg) and leaves at a pressure of 1.5 bar. The initial and final velocities of steam are 40 m/s and 700 m/s respectively through the nozzle. The mass flow rate is 1400 kg/hr and heat loss from the nozzle is 11705 kJ/hr. Specific volume at exit is 1.24 m ³ /kg. Determine final enthalpy and exit area.	CO2
6	Write two major statements of second law of thermodynamics and show that violation of one statement leads to violation of other one.	CO2
7	Explain First law of thermodynamics for the closed system: (i) undergoing a cycle (ii) change of state/process.	CO2
8	Compare steady flow processes with unsteady flow processes.	CO2
9	In air compressor air enters at a 4 m/s, 1 bar, 0.5 m ³ /kg. the exit conditions 7 m/s, 6bar, 0.12 m ³ /kg. the inlet energy of air is gained after compression process is 38 kJ/kg. the system losses 3000 kJ/min of heat to surroundings during process. Mass flow rate of air 31 kg/min. calculate (i) shaft work input (ii) ratio of inlet to outlet areas.	CO2
10	Discuss the Limitation of first law of thermodynamics.	CO2