

Question Bank

Unit Test II

Program : Mechanical Engineering

Course – Thermal Engg. (TEN)

Semester: ME3I

Course Code- TEN (22337)

Unit 4 Steam Turbines

Questions for 2 marks

1. Give classification of steam turbines.
2. Define and state significance of MACH number.
3. List four applications of nozzle.

Questions for 4 marks

1. Explain with neat sketch regenerative feed heating system.
2. Differentiate between impulse and reaction turbine.
3. Why compounding of steam turbine is done? State different types of compounding.

Unit 5 Steam Condensers

Questions for 2 marks

1. Define condenser efficiency.
2. What is vacuum efficiency of condenser?
3. State Dalton's law of partial pressure.
4. State various types of cooling towers.

Questions for 4 marks

1. State the sources of air leakage and its effects in steam condenser.
2. Compare jet and surface condensers.
3. Find the condenser efficiency, when cooling water enters a condenser at temperature of 28 degree Celsius and leaves at 39 degree Celsius. The vacuum produced is 705mm of Hg and barometer reads 760mm of Hg.
4. The vacuum in a surface condenser is 705mm of Hg and barometer reading is 760mm of Hg. The outlet and inlet temperature of cooling water to condenser is 38 degree Celsius and 31 degree Celsius respectively. Determine condenser efficiency.

UNIT 6 Heat Transfer and Heat Exchangers

Questions for 2 marks

1. Define black body and grey body.
2. Define Transmissivity and Emissivity.
3. State Stefan's Boltzmann law.

Questions for 4 marks

1. Classify heat exchangers and state their applications.
2. Define heat transfer. Explain different modes of heat transfer.
3. A wall refrigerated van is made up of 1.5mm of steel sheet of outer surface, 10mm plywood at the inner surface and 2cm of glass wool in between. Calculate the rate of heat flow if temperature at the inside and outside surfaces is -15 degree Celsius and 24 degree Celsius. Take, $K(\text{for steel})=23.2 \text{ W/mK}$, $K(\text{for wood})= 0.052 \text{ W/mK}$.
4. A metal pipe having diameter of 150mm carries steam at 250 degree Celsius. The pipe is covered externally by 25mm thick of an insulating material whose thermal conductivity is 0.112 W/mK . If outside temperature is 38 degree Celsius. Find out amount of heat lost per meter length per minute.