R15

Code No: 125ER

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, October - 2020
THERMAL ENGINEERING – II
(Common to ME, AME)

Time: 2 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
- - -

1.a) What is the importance of Reheating in Rankine cycle? Derive the expression for efficiency.
b) Steam leaves the boiler in a Steam turbine plant at 2MPa, 300 ^{0}C and is expanded to 3.5kPa before entering the condenser. A Reheat cycle with Steam reheated to 300 ^{0}C at the pressure when it becomes saturated vapour? [7+8]

2.a) What is Flue gas analysis?
b) Natural gas containing 80% CH_4,15% C_2H_6 and 5% C_3H_8 is burnt with 50% excess air. Assuming that 90% of the Carbon in the hydrocarbons are converted to CO_2 and the rest to, Determine Flue gas analysis? [7+8]

3.a) What are the features of High Pressure Boilers?
b) What are the different Mountings and Accessories used in Boilers? [7+8]

4.a) How nozzles are classified based on Mach number of the flow passing through?
b) Air at 7.8 bar and 180 ^{0}C expands through a convergent-divergent nozzle into a space at 1.03 bar. The flow rate of air is 3.6 kg/s. Assuming isentropic flow throughout and neglecting the inlet velocity, calculate the throat and exit areas of the nozzle. [7+8]

5.a) What is Impulse turbine? Explain its Working principle.
b) Derive the expression for Power produced in Impulse turbine with neat sketch of Velocity diagrams. [6+9]

6.a) What are the working principles of different Steam Condensers?
b) Explain the term "Degree of Reaction". What is the value of DoR for different turbines? [7+8]

7.a) Explain Closed and Semi-closed Gas turbine cycles with neat sketch.
b) Explain the following terms
i) Reciprocating compressor
ii) Scroll compressor
iii) Rotary compressor. [7+8]

8.a) What is the working principle of Jet propulsion system? Explain with T-S diagram.
b) What are the needs and demands met by Turbo jet? [8+7]

---ooOoo---

StudentSuvidha.com
downloaded from

Download all NOTES and PAPERS at StudentSuvidha.com