



B.E /B.Tech DEGREE END SEMESTER EXAMINATION – APRIL/MAY 2011

INDUSTRIAL ENGINEERING BRANCH

FOURTH SEMESTER - (REGULATION 2004)

ME 551 – THERMODYNAICS

Time : 3 hr

Max. Marks: 100

Answer ALL Questions
PART – A (10 x 2 = 20 Marks)

1. Define intensive and extensive properties?
2. What is an open system? Give example.
3. Draw Carnot cycle on p-v diagram.
4. Mention any two differences between 2 stroke and 4 stroke engines.
5. List the various boiler mountings and accessories.
6. Why compounding is necessary for steam turbine?
7. What are the advantages of reciprocation compressor over rotary compressor?
8. Mention the various components in an air conditioning system.
9. State Fourier's law of conduction?
10. What are the various types of heat exchangers?

PART – B (5 x 16 = 80Marks)

11. i) A certain mass of air initially at 100 °C and 7 bar occupies 0.21 m³. The air is heated at constant pressure such that the volume becomes three times the initial volume. A polytropic process with $n = 1.3$ is then carried out, followed by an isothermal process which completes the cycle. Considering all the processes reversible find,
 - a) The heat rejected and received during each process
 - b) Net work done during the cycle.
 - c) Sketch the cycle on p-v diagram
12. a) During a steady flow process, 5000 kg/hr of fluid passes through a system in which the exit pipe is 300 cm below the inlet connection. Taking the following data,
 - a) Pressure decreases from 7 bar to 1.2 bar.
 - b) Velocity increases from 60 to 400 m/s.
 - c) Internal energy decreased by 0.5 MJ/kg.
 - d) Heat lost by the system is 100 MJ/hr.

Find the power developed by the system in kW.

(4x4)

