



PAPER ID : 4049

TME-307

Paper ID and Roll No. to be filled in your Answer Book

Roll No. **B. Tech.**

(SEM. III) (ODD SEM.) (REG. &amp; BACK) EXAMINATION, 2012-13

**THERMAL & FLUID MACHINES**

[Total Marks : 50]

Time : 2 Hours]

- Note :**
- (1) All questions are compulsory.
  - (2) Draw diagrams wherever necessary.
  - (3) All questions carry equal marks. .

- 1 Attempt any FOUR parts of the following : 2.5×4
- (a) What is thermodynamic equilibrium ?
  - (b) Write short notes on cyclic process and enthalpy.
  - (c) State second law of thermodynamics. Also tell its application.
  - (d) Write short note on "Carnot cycle and concept of entropy".
  - (e) What is Rankine cycle and regenerative cycle?
  - (f) Write short note on process involving steam in closed and open systems.

- 2 Attempt any FOUR parts of the following : 2.5×4
- (a) How steams are classified? Give diagrams of impulse and reaction turbine.
  - (b) What is governing of turbine ? Explain.

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- (c) Explain velocity diagram for reaction turbine.
- (d) What is working principle of gas turbine?
- (e) Explain Brayton cycle.

3 Attempt any TWO parts of the following : 7.5×2

- (a) Explain with sketch working of centrifugal compressor.
- (b) Air enters in a gas turbine compressor at 1 bar and 20°C and is compressed to 5 bar. It is then heated to 900°C in the combustion chamber and expanded to a pressure of 1 bar in a turbine. Calculate :
  - (i) Compressor work
  - (ii) Heat supplied
  - (iii) Turbine work
  - (iv) Efficiency of cycle.
- (c)
  - (i) Explain the combustion phenomena in CI engines.
  - (ii) Describe the factors which control detonation in SI engines.

4 Attempt any TWO parts of the following : 7.5×2

- (a) How hydraulic turbine are classified? Give construction of hydraulic dam.
- (b) How work done and efficiency of impulse and reaction turbine is calculated ?
- (c) Write short notes on Otto and diesel cycles.