

(02)

Q No.5:

Use a 230/12 V transformer in a full wave rectifier, draw complete circuit diagram and calculate accurately DC output voltage.

(20 Marks)

Q No.6:

a) Steam expands adiabatically in a turbine from 20 bar, 400 °C to 4 bar, 250 °C, calculate:

- i) The isentropic efficiency of the process;
- ii) The loss of exergy of the system assuming an atmosphere temperature of 15 °C;
- iii) The effectiveness of the process.

Neglect changes in kinetic and potential energy.

- b) Show on T-S diagram (i) irreversible adiabatic process for steam; (ii) irreversible adiabatic compression for a perfect gas.

(16+4 Marks)

Q No.7:

- a) Draw crystal structures of metals; (i) face-centered cubic (fcc); (ii) body-centered cubic (bcc); (iii) hexagonal close packed (hcp).
- b) What information can be obtained from an equilibrium diagram? Draw Iron-Carbon equilibrium diagram, showing various phases.

(6+14 Marks)

Q No.8:

Illustrate the following processes with the help of a schematic diagram:

- i) Rolling
- ii) Extrusion
- iii) Wire-drawing
- iv) Forging

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