

(15)

**FIFTH SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/
TECHNOLOGY - NOVEMBER 2017**

POWERPLANT ENGINEERING

MODEL QUESTION PAPER

[Time : 3 hours]

(Maximum Marks : 100)

PART - A

(Maximum marks : 10)

I. Answer the following question in one or two sentences. Each question carries 2 marks)

1. Define Boiler draught
2. Define vacuum efficiency
3. State the functions of cooling towers
4. List the fuels used in gas turbine
5. Define nuclear fusion

(2 x 5 = 10)

PART - B

II.

1. Explain calorific value LCV and HCV?
2. Write the advantages of steam turbine over steam engine?
3. Explain different types of cooling towers?
4. Explain the working of Air pump?
5. Explain Ram jet engine?
6. Compare steam turbine with gas turbine?
7. Explain Nuclear reaction and Fission?

(6 x 5 = 30)

PART - C

MODUEL - I

III.

1. Explain Different types of Solid fuel?
2. Explain La-Mont Boiler?

(8)

(7)

Or

- IV. 1. Explain the necessity of compounding of turbine? Write the various types of compounding method?**

(7)

- 2. Draw the schematic diagram of Bomb calorimeter and explain it? (8)

MODULE – II

V

- 1. Explain different types of Jet condensers? (7)
- 2. A steam power plant is supplied with dry saturated steam at a pressure of 12 bar and exhausts into a condenser at 0.1 bar calculate the Rankine efficiency by using 1) Steam tables and 2) Mollier chart (8)

Or

VI.

- 1. Explain Rankine cycle (7)
- 2. A simple Rankine cycle steam power plant operates between the temperatures of 260°C & 95°C. The steam is supplied to the turbine at a dry saturated condition in the turbine it expands in an isentropic manner. Determine the efficiency of Rankine cycle followed by the turbine and the efficiency of Carnot cycle, operating between these two temperature limits. Draw the turbine cycle on a h – s or on a T-s diagram (8)

MODULE - III

VII

- 1. Draw the schematic diagram of diesel power plant and Explain (7)
- 2. In an oil gas turbine installation, it is taken at pressure of 1 bar and 270°C and compressed to a pressure of 4 bar. The oil with calorific value of 42000KJ/Kg is burnt in the combustion chamber to raise the temperature of air to 550°C. If the air flows at the rate of 1.2Kg/s; find the net power of installation. Also find air fuel ratio. Take $C_p = 1.05 \text{KJ/kg K}$ (8)

Or

VIII.

- 1. Draw the schematic diagram of hydroelectric power plant and Explain it ? (8)
- 2. Explain Turbo Jet Engine (7)

MODULE – IV

IX

- 1. With the neat sketch Explain a Solar grain drier? (7)
- 2. Explain Biogas power plant? (8)

Or

X

- 1. Explain Fast Breeder Reactor? (7)
- 2. Explain the construction and working of windmill (8)