

22214

23124

3 Hours / 70 Marks

Seat No.

--	--	--	--	--	--	--	--

- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Figures to the right indicate full marks.
  - (3) Assume suitable data, if necessary.
  - (4) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Attempt any FIVE of the following :**

- |  |   |
|--|---|
| (a) What is a match number in relation to De-Laval Nozzle ?  | 2 |
| (b) State the application of Nozzle.                         | 2 |
| (c) Write down any four components of Domestic Refrigerator. | 2 |
| (d) Define Wet steam and Dry steam.                          | 2 |
| (e) Define Brake power and Brake thermal efficiency.         | 2 |
| (f) Enlist the part of Centrifugal pump.                     | 2 |
| (g) Define dryness fraction and degree of super Heat.        | 2 |

**2. Attempt any THREE of the following :**

- |  |   |
|--|---|
| (a) Describe the need of compounding in steam turbine. State the name of compounding method for reaction turbines. | 4 |
| (b) Difference between Open cycle and Closed cycle gas turbine.  | 4 |



- (c) Turbine is operating on 150 m of water head, the discharge of water is 6.0 m<sup>3</sup>/s find the power developed by the turbine neglecting the losses. Take density of water 9.8 kN/m<sup>3</sup>. 4
- (d) Name the hazardous pollutants in a steam power plant with their effect on Human body. 4
- 3. Attempt any THREE of the following :**
- (a) State the need of compounding of steam. 4
- (b) State any four applications of Gas turbine an power plant. 4
- (c) Mention the corrective action to reduce the electricity bill due to an air compressor. 4
- (d) Explain two methods to reduce power consumption of Air compressor with Justification. 4
- 4. Attempt any THREE of the following :**
- (a) In diesel engine heat is supplied at a rate of 21.50 kW. Engine producers brake power at a rate of 5.2 kW. Estimate brake thermal efficiency. 4
- (b) List of four applications of compressor Air. 4
- (c) Explain working of open cycle gas turbine with neat sketch. 4
- (d) List of any two methods to reduce Sulphur Dioxide (So<sub>2</sub>) emission from thermal power plants. 4
- 5. Attempt any TWO questions of following :**
- (a) State the function of following component of refrigerator. 6
- (i) Thermostat
  - (ii) Defrost heater
  - (iii) OLP
  - (iv) HP and LP cut out

- (b) Explain working of simple vapour compression system with neat sketch of its Layout. **6**
- (c) Draw a neat sketch of Francis turbine in two views and show the following component on it : **6**
- (i) Draft tube
  - (ii) Guide vanes or wicket gates

**6. Attempt any TWO of the following :**

- (a) Explain the purpose of **6**
- (i) Boiler mountings
  - (ii) Boiler accessories
  - (iii) Fusible plug
- (b) Explain working of single acting reciprocating pump with sketches. **6**
- (c) Explain with a neat sketch the vapour compression system used in domestic refrigerator. **6**
-

