22214

12425

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. Attempt any FIVE of the following : **10**

(a) Write two effects of Knocking in I.C. engine.

(b) Define one ton of refrigeration.

(c) Define brake power and brake thermal efficiency.

(d) Enlist the parts of centrifugal pump.

(e) Define wet steam and dry steam.

(f) List the applications of refrigeration system.

(g) Define pressure and state it's SI unit.

2. Attempt any THREE of the following : **12**

(a) Differentiate between Open Cycle and Closed Cycle gas turbine. (Any 4 points)

(b) List any four pollutants in exhaust gases of I.C. engine with their effect on environment.

(c) Sketch the layout of steam power plant and label the components.

(d) State any four applications of Gas turbine.

3. Attempt any THREE of the following : **12**

(a) Write the function of superheater and fusible plug in boiler.

(b) Explain the function of water level indicator and pressure gauge.

(c) Draw the neat sketch of Cochran boiler.

(d) State the working principle of Pelton turbine giving two applications.

4. Attempt any THREE of the following : **12**

(a) Differentiate between centrifugal compressor and reciprocating compressor. (Any 4 points)

(b) List any four applications of compressor air.

(c) Explain two methods to reduce power consumption of air compressor.

(d) In a diesel engine, heat is supplied at the rate of 17.5 kW, engine produces power at the rate of 4.8 kW. Estimate the brake thermal efficiency.

(e) Two sets strike the bucket of Pelton wheel which develops 15000 kw. The discharge is 06 m^3/sec. If the net head on turbine is 350 m, find the overall efficiency in turbine.

5. Attempt any TWO of the following : **12**

(a) Explain working of simple vapour compression system with neat sketch of it's layout.

(b) It is observed that when refrigerator is switched ON the compressor do not start. Mention the possible causes with remedies.

(c) State the types of air-conditioning system and explain with sketch any one air-conditioning system.

6. Attempt any TWO of the following : **12**

(a) Compare reciprocating pump and rotary pump and draw the sketch of centrifugal pump. (Any 6 points)

(b) Classify various types of nozzles and give their applications.

(c) Explain the purpose of;

(i) Boiler mounting

(ii) Boiler accessories

(iii) Safety valve