

17413

15162

2 Hours / 50 Marks

Seat No.

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- Instructions :** (1) All Questions are *compulsory*.  
(2) Illustrate your answers with neat sketches wherever necessary.  
(3) Figures to the right indicate full marks.  
(4) Assume suitable data, if necessary.  
(5) Use of Non-Programmable Electronic Pocket Calculator is permissible.  
(6) Use of steam tables, logarithmic, Mollier's chart is permitted.

**Marks**

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

**7 × 2 = 14**

- (a) How boiler efficiency is differ from seasonal efficiency ?
- (b) State different power losses in turbine.
- (c) What is purpose of Morse test ? Name other methods.
- (d) State different industrial use of air compressor.
- (e) Define FAD (free air delivered) of air compressor.
- (f) Write different uses of rotodynamic pump.
- (g) Classify turbine according to direction of steam flow.
- (h) Write function of foot valve.
- (i) Write the equation of power required to drive reciprocating pump.
- (j) What is principle of operation of steam turbine ?
- (k) Enlist the sources of heat losses in boiler.

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

**4 × 3 = 12**

- (a) Sketch and explain Benson critical boiler.
- (b) Define cylinder bore and piston displacement of IC engine.
- (c) Explain working of single stage air compressor with P-V diagram.

**P.T.O.**

- (d) What does staging mean ? What are the advantages of multistage compression ?
- (e) Write advantages and disadvantages of double acting pump.
- (f) How you can select proper piping system of centrifugal pump ?

**3. Attempt any FOUR of the following :**

**4 × 3 = 12**

- (a) Differentiate between subcritical and supercritical boiler.
- (b) How combustion takes place in C.I. engine ? Also write its application.
- (c) Name three types of reciprocating air compressor that are commonly used in industry with its one application.
- (d) What is purpose of hydraulic pump in fluid power system ?
- (e) Explain the power torque characteristics with graph of an spark ignition engine.
- (f) Write the possible causes and remedies for following in case of IC engine :
  - (i) Excessive vibration
  - (ii) Suction problem
  - (iii) Bearing wear
  - (iv) Irregular discharge

**4. Attempt any FOUR of the following :**

**4 × 3 = 12**

- (a) Explain superheater and preheater in super critical boilers.
  - (b) Explain clearly why priming is essential before starting of centrifugal pump.
  - (c) Define the term specific speed of centrifugal pump and state an expression for it in terms of head, discharge and speed and rpm.
  - (d) Explain working of impulse turbine with neat sketch.
  - (e) List the four stages of compressed air preparation.
  - (f) State the faults and remedies for following causes in IC engine :
    - (i) Incorrect gap between radiator and fan
    - (ii) Piston seizure
    - (iii) No spark at spark plug
    - (iv) Engine turns over
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