

17413

21819

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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
 - (7) Use of steam tables, logarithmic, Mollier's chart is permitted.

Marks

1. Attempt any NINE of the following :

9 × 2 = 18

- (a) Explain the function of following in I.C. Engine (i) Piston (ii) Crank.
- (b) Define brake power and indicated power.
- (c) Differentiate between rotary and reciprocating compressor (any two points).
- (d) Define the term boiler efficiency.
- (e) State the methods of energy saving in compressor.
- (f) Enlist the various heat losses in boiler.
- (g) Classify air compressor based on :
 - (i) Working
 - (ii) Action
- (h) Name the main components of I.C. engine.
- (i) Write the function of foot valve.
- (j) Write the equation of power required to drive reciprocating pump.
- (k) State the different types of impellers.

[1 of 2]

P.T.O.

2. Attempt any FOUR of the following :**4 × 4 = 16**

- (a) Differentiate between impulse and reaction turbine.
- (b) Give detail classifications of turbines.
- (c) What is priming ? Why it is necessary for centrifugal pump ?
- (d) Define :
 - (i) Swept volume
 - (ii) Compression ratio
 - (iii) FAD
 - (iv) Compressor capacity
- (e) List the tests conducted for performance of I.C. engine. Explain Morse test.
- (f) State the methods of energy saving in air compressor and explain any one.

3. Attempt any FOUR of the following :**4 × 4 = 16**

- (a) The following data were recorded during testing of a four stroke cycle gas engine.
 - Area of indicated diagram = 900 mm^2
 - Length of indicated diagram = 70 mm
 - Spring scale = 0.3 bar/mm
 - Diameter of cylinder = 200 mm
 - Length of stroke = 250 mm
 - Speed = 300 rpmDetermine :
 - (i) Indicated mean effective pressure
 - (ii) Indicated power
 - (b) Explain with neat sketch the working of screw type rotary compressor.
 - (c) Explain the construction and working of centrifugal pump with neat sketch.
 - (d) State the different power losses in turbine.
 - (e) Explain superheater and preheater in super critical boiler.
 - (f) State and draw different types of casing used in centrifugal pump.
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