

17413

15116

2 Hours / 50 Marks

Seat No.

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- 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any SEVEN of the following:** **14**
- a) State the function of air heater of super-critical boiler?
 - b) Define annual efficiency of boiler?
 - c) List the applications of condensing and non-condensing turbines.
 - d) Define accident term in “Boiler Act”.
 - e) Describe the necessity of engine testing.
 - f) Define air compressor.
 - g) Define swept volume in case of air compressor.
 - h) Analyze perfect intercooling and imperfect intercooling in air compressor?
 - i) State the application of roto dynamic pump.
 - j) State the function of diffuser in centrifugal pump.

P.T.O.

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

- a) Sketch and explain Benson critical boiler, state its advantages and disadvantages.
- b) Draw and explain temperature verses pressure diagram showing three phases in super critical boiler.
- c) Classify I.C. engine according to methods of ignition, injection, working cycle and application.
- d) Give possible causes and remedies of following:
 - (i) Difficulty in starting
 - (ii) Leakage of exhaust
 - (iii) No spark at spark plug and
 - (iv) Low engine compression
- e) Explain energy saving methods in air compressor.
- f) Explain in brief construction and working of centrifugal pump.

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

- a) Write advantages and disadvantages of super critical boiler.
- b) Derive the equation for power developed by turbine.
- c) Define manometric head and also write its equation stating the meaning of notations used.
- d) Explain working of two stage reciprocating air compressor. Show work saved on p-v diagram with respect to single stage compression.
- e) Differentiate between single stage and multistage air compressor.
- f) State purpose of casing and explain the volute casing with guide blade with neat sketch.

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

- a) Differentiate between impulse reaction and reaction turbine.
 - b) State the necessity of intercooling in multistage air compressor?
 - c) Explain any one method used to measure the brake power of engine.
 - d) Explain with neat sketch axial flow compressor.
 - e) Give advantages and disadvantages of peristaltic pump.
 - f) Define pumping power? State various factors affecting the pump efficiency?
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