Reg. No. : | | | | | | | | | | | |

Question Paper Code : R 3772

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Fourth Semester

Mechanical Engineering

ME 237 — THERMAL ENGINEERING

(Regulation 2001)

Time : Three hours Maximum : 100 marks

(Use of Steam table/charts and refrigeration table/charts is permitted).

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Enumerate the factors which should be considered while selecting a boiler?

2. What is steam trap?

3. What is Diagram or Blading efficiency?

4. Define the term stage efficiency in case of reaction turbines.

5. What is the function of push rod and rocker arm?

6. List out the advantages of electronics ignition system over the conventional systems.

7. What are the major losses in an IC Engine?

8. Explain the location of sparkplug with respect to knocking in SI engines.

9. How does humidity affect human comfort?

10. What is humidification and dehumidification?

PART B — (5 × 16 = 80 marks)

11. (a) (i) What are the various criteria for selection of a boiler? Explain. (8)

(ii) Explain the function of blow off cock and fusible plug. (8)

Or

(b) Explain with a neat diagram, construction and working of any water tube boiler. (16)

12. (a) (i) Describe with a neat sketch the working of Cochran boiler. Show the positions of different mountings and explain the functions of each. (9)

(ii) Mention the chief advantages and disadvantages of water tube boilers over fire tube boilers. (7)

Or

(b) Describe the construction and working of the Babcock and Wilcox boiler. (16)

13. (a) (i) Draw the port timing diagram with fuel injection of a two-stroke diesel engine and explain the sailent points. (7)

(ii) Explain the effects of time loss factor and heat loss factor with suitable Graphs on the performance of actual I.C. Engines. (9)

Or

(b) (i) Explain Air Cooling of Engines with a neat sketch. (8)

(ii) Explain any one lubrication system adopted in Multicylinder SI engines. (8)

14. (a) Explain the principle of Magneto ignition system. Enumerate its advantages and disadvantages. (16)

Or

(b) (i) Explain the methods of controlling Diesel knock. (6)

(ii) Explain the procedure to determine the indicated Horse Power by means of Morse Test. (10)

15. (a) (i) Classify A/C systems and explain central air-conditioning Systems. (8)

(ii) Write short notes on 'solar radiation' and explain how it affects the heating load calculations. (8)

Or

(b) Explain with a neat sketch the summer Air-conditioning suitable for Chennai weather conditions. (16)