Roll No. | | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech.(ME) (2012 Onwards)/(Marine Engg.) (2013 Onwards) (Sem.–3)

APPLIED THERMODYNAMICS–I

Subject Code : BTME-304

M.Code : 59114

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Answer briefly :

1. Enumerate the characteristics of a good fuel.
2. How I.C. engines are classified?
3. Write the function of knockmeter.
4. Define Pure substance.
5. Define Dryness Fraction.
6. Discuss the working of 'Superheater'.
7. What is the function of cooling tower?
8. Define Stage Efficiency of steam turbine.
9. What are the functions of condenser in a steam plant?
10. State Dalton's law of partial pressure.

SECTION-B

11. Lay down the procedure for determination of minimum air required for complete combustion of coal.

12. Describe the phenomenon of detonation in I.C. engines. On what factors does detonation depend?

13. Determine the external work done during the evaporation and internal latent heat at a pressure of 1 Mpa and dryness fraction of 0.80.

14. Explain the construction and working of a Lancashire boiler with the help of a suitable sketches.

15. The vacuum efficiency of a condenser is 96%. The temperature of condensate is 40 °C. If the barometer reads 752 mm of Hg, find the vacuum gauge reading of the condenser.

SECTION-C

16. Explain, with neat sketches, the sequence of events in the working of a two-stroke diesel engine.

17. State the effects of the following parameter in a Rankine cycle :

    a) Steam pressure at inlet to turbine

    b) Steam temperature at inlet to turbine

    c) Steam pressureat exhaust

18. Dry saturated steam enters a nozzle at a pressure of 10 bar and with an initial velocity of 90 m/s. The oulet pressure is 6 bar and nozzle velocity is 435 m/s. The heat loss from the nozzle is 9 kJ/kg of steam flow. Calculate the dryness fraction and the area at the exit, if the area at the inlet is 1256 mm^2.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.