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

Total No. of Questions : 18

B.Tech. (ME) (2018 Batch) (Sem.–3)

BASIC THERMODYNAMICS

Subject Code : BTME305-18

M.Code : 76422

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

Write briefly :

1. Define thermodynamics.
2. State the concept of temperature and equality of temperature.
3. Define specific heat.
4. What is mechanical equivalent of heat?
5. What is perpetual motion machine of first kind?
6. Define free expansion process.
7. What is thermal reservoir?
8. Define thermal efficiency of heat engine. Can it be 100%.
9. What is cut-off ratio?
10. Define dryness fraction of steam.

SECTION-B

11. State the difference between extensive, intensive and specific properties of a thermodynamic system.

12. Write the comparison between Macroscopic and Microscopic approach.

13. An ideal gas requires 1150 kJ/kg of heat to raise its temperature from 20°C to 100°C when heated at constant pressure. When heat is supplied to the same gas at constant volume, the heat requirement is 825 kJ for the same temperature range. Determine the specific heat at constant pressure, specific heat at constant volume, adiabatic exponent, characteristic gas constant and the molecular mass of gas.

14. Define entropy and show change in entropy in an irreversible process.

15. Explain, with neat sketches, the sequence of events in the working of a two stroke petrol.

SECTION-C

16. State first law of thermodynamics and drive its analytical expression.

17. Explain throttling process and draw isenthalpic curves for a real gas and indicate there upon the inversion curve.

18. State and explain the Carnot theorem and discuss its corollaries.

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.