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.   Explain Microscopic and Macroscopic approaches to thermodynamics.

2.   Differentiate Thermal and Thermodynamic equilibrium.

3.   Define "Control Volume". How it is different from a system?

4.   Define Third Law of Thermodynamics.

5.   Define Air Standard Efficiency.

6.   Differentiate between heat and work and state their salient characteristics.

7.   Define Entropy. How it affects energy conversion?

8.   Define "Dryness Fraction".

9.   State limitations of Carnot cycle.

10. Define Mean Effective Pressure and Compression ratio.

SECTION-B

11. a) What do you understand by the thermodynamic concept of Enthalpy?

    b) State Zeroth Law of Thermodynamics. Why it is called the "Zeroth Law"?

12. Define the first Law of thermodynamics as applied to Cyclic and non-cyclic processes. Also, state limitations of First law.

13. Explain the philosophy of Most Efficient Process (Reversible) ; state conditions and explain why an actual expansion process (with non-ideal gas) does not achieve reversibility?

14. Establish equivalence of two statements of 2nd law of thermodynamics.

15. Define Entropy and show that for an irreversible process.

$$\int ds > \int \delta Q / T$$

SECTION-C

16. Explain principle of working of a two stroke cycle engine with neat diagrams, also plot the cycle on p-v chart and draw its port timing diagram.

17. Discuss the effect of Inter Cooling, reheating and regeneration on gas turbine cycle with the help of P-V and T-S diagrams.

18. Compare the performance of Otto, Diesel and Dual air standard cycles on different aspects with the help of P-V and T-S diagrams.

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.