Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

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

1. Write briefly :

a. State the conditions for a process to be reversible.

b. Define Zeroth law of thermodynamics.

c. Define Thermodynamic work.

d. Define Enthalpy.

e. What is throttling process?

f. What is heat pump? How it differs from a refrigerator?

g. State Entropy principle.

h. What is air standard efficiency?

i. What is explosion ratio?

j. How I.C. engines are classified?

SECTION-B

2. Explain the terms state, path, process and cycle.

3. Write the similarity and dissimilarities between work and heat.

4. State first law of thermodynamics and write its corollaries.

5. A reversible heat engine delivers 0.6 kW power and rejects heat energy to a reservoir at 300 K at the rate of 24 kJ/min. Make calculation for the engine efficiency and the temperature of the thermal reservoir supplying heat to the engine.

6. Explain the process of steam generation at constant pressure and show the various stages on *p-v* and *T-v* diagrams.

SECTION-C

7. Derive analytical expression to find the work done, heat supplied and change in internal energy in adiabatic process.

8. Derive expression for steady flow energy equation and discuss its various engineering applications.

9. Define an expression for the air standard efficiency of the Diesel cycle in terms of the compression ratio, cut off ratio and the adiabatic index.

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.