3060

B. Tech. 3rd Semester (ME)
Examination – March, 2021

THERMODYNAMICS

Paper : PCC-ME-213-G

Time : Three Hours]   [Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :   Question *one* is *compulsory* having *six* parts and each part is of **2.5** marks total of **15** marks and remaining questions is of **15** marks. And attempt *one* question from each Unit.

1. (a) What do you mean by Reversible Process ?

    (b) What is Internal energy ?

    (c) Define the Zeorth Law of Thermodynamics.

    (d) Pure substance.

(e) Define COP.

(f) Write short note on energy balance equation. 15

UNIT – I

2. A Carnot engine operates b/w two reservoirs at temp. T_1 and T_3. The work output of the engine is 0.6 times the heat rejected. The difference in temperatures b/w the source and the sink is 2000C. Calculate the thermal efficiency, source temperature and the sink temperature. 15

3. Define first law for cyclic and non-cyclic processes and concept of total energy. 15

UNIT – II

4. (a) Explain ideal gases and ideal gas mixture. 8

   (b) Define compressibility charts-properties of two phase systems. 7

5. Explain saturated states, P-V-T surface, superheated tables. 15

UNIT – III

6. Explain the steady state steady flow processes using throttling process. 15

3060-2000-(P-3)(Q-9)(21)   (2)

7. Define Kelvin-Plank and Clausius statements with neat sketches. 15

UNIT – IV

8. Define isentropic efficiency for compressors, turbines and nozzles, also explain irreversibility and availability. 15

9. Explain with the help of neat sketch basic Rankine cycle and Brayton cycle. 15

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