Roll No. ....

24046

B. Tech 3rd Semester (MAE)

Examination – December, 2017

THERMODYNAMICS

Paper : ME-201-F

Time : Three Hours]   *[Maximum Marks : 100*

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 : Attempt *five* questions in all, selecting *one* question from each Section. Question No. **1** is *compulsory*.

1. (a) What is an ideal gas.   2

    (b) What do you mean by Extensive properties ?   2

    (c) Define second law of thermodynamics.   2

    (d) Define source and sink   2

    (e) What is steady flow process ?   2

    (f) Explain Dryness fraction, enthalpy and entropy as a property of steam   4

    (g) Write short note on heat and work ?   2

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(h) What is dryness fraction and how it is measured. 2

(i) What do you mean by Joule Thomson coefficient ? 2

SECTION – A

2. (a) Define and explain the term State, Path, Quasi-static process. 10

   (b) What is enthalpy energy ? How it is stored in system. 10

3. (a) Discuss the Zeroth Law of Thermodynamic and its utility. http://haryanapapers.com 10

   (b) Derive steady flow energy equation for throttling process. 10

SECTION – B

4. 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 200° C. Calculate the efficiency, source temperature and the sink temperature ? 20

5. (a) Write the short note Loss of Available Energy Due to Heat Transfer through a Finite Temperature 10

   (b) What do you understand by entropy principal and show that entropy is a property of system' ? 10

SECTION – C

6. (a) Discuss the Properties of Dry, Wet and Superheated Steam. 10

   (b) Discuss the Phase and Phase Transformation process. 10

7. Write short note on (a) Avogadro's Law (b) Pure substance (c) mass and mole fraction 20

SECTION – D

8. Explain the Maxwell Relations and Clapeyron Equation. 20

9. Explain the otto cycle and drive its thermal efficiency relation and draw the p-v and t-s diagram. 20