

Roll No. ....

**3060**

**B. Tech. 3rd Semester (ME)  
Examination – December, 2022**

**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 : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.*

1. (i) Define thermal equilibrium.
- (ii) Define thermodynamic definition of work with examples.
- (iii) Define thermal efficiency.
- (iv) Define Carnot cycle.
- (v) Define Irreversibility and availability.
- (vi) Define ranpine cycle. 2.5 × 6 = 15

### UNIT – I

2. Explain heat in details also explain work/heat interaction in systems and first law of thermodynamics. 15
3. Explain the following : 15
  - (i) Modes of energy
  - (ii) Internal energy and enthalpy

### UNIT – II

4. Define pure substance and ideal gases also explain P-V and T-S diagram for pure substance. 15
5. Explain various types of steams in details also explain compressibility charts and Mollier's chart. 15

### UNIT – III

6. Explain the following : 15
  - (i) Direct and reverse heat engine.
  - (ii) Reversible process and irreversibility.
7. Explain various examples of steady flow devices and explain various applications of first law of thermodynamics. 15

### UNIT – IV

8. Explain vapour compression refrigeration cycle in details and compare with Carnot cycle. 15
9. Explain clausius Inequality and entropy in details. 15