

Roll No.....
Total No. of Questions: [09]

Total No. of Printed Pages: [01]

B. SC. (Hons.) Physics (Semester –2nd)
THERMAL PHYSICS
Subject Code: BPHYS1-201
Paper ID: [19131510]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

- Q1. Attempt the following:
- a. Define thermodynamic equilibrium?
 - b. Define concept of entropy?
 - c. What do you mean by coefficient of performance?
 - d. What is internal energy?
 - e. What is binding energy?
 - f. Define Surface Films?
 - g. What do you understand by concept of heat and work?
 - h. What do you mean by enthalpy?
 - i. What do you understand by principle of increase of entropy?
 - j. Define efficiency?

Section – B

(5 marks each)

- Q2. Derive the relation between CP and CV?
- Q3. Explain the concept of Zeroth law of thermodynamics with suitable examples? Also include the concept of temperature in it?
- Q4. What is Carnot's cycle? Also draw the temperature-entropy diagrams for Carnot's cycle?
- Q5. Explain the followings:
- a. Explain Helmholtz Free Energy?
 - b. What do you mean by Gibb's free energy? Write down its applications also?
- Q6. State and prove Clausius Theorem?

Section – C

(10 marks each)

- Q7. Explain the followings:
- a. What are Kelvin-Planck and Clausius statements?
 - b. Write down the differential form of first law of thermodynamics?
- Q8. Elaborate the expression of work done during adiabatic and isothermal processes along with their coefficients with particular examples?
- Q9. Write note on the followings:
- a. What is Joule-Kelvin coefficient for ideal and Vander Waal gases?
 - b. What are Maxwell's thermodynamic relations?
 - c. Write any four applications of Maxwell's thermodynamic relations?