

**PARUL UNIVERSITY**  
**FACULTY OF APPLIED SCIENCE**  
**B.Sc., Summer 2017-18 Examination**

**Semester: 2****Subject Code: 11104151****Subject Name: Physics - II****Date: (11/05/2018)****Time: 10:30 am to 01:00 pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1. A) Essay type/ Brief note (4x2) (Each of 04 marks) (08)**

- (a) Explain Degree of freedom
- (b) Write postulates of kinetic theory of gases.

**Q.1. B) Answer the following questions (Any two)**

- (a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) (04)
  1. Define entropy
  2. Define heat
- (b) Derive the RMS velocity and represent it in terms of absolute temperature (04)
- (c) Explain Maxwell's law of equilibrium of energy (04)

**Q.2. A) Answer the following questions.**

- (a) Short note (04)
  1. Derive the expression of pressure exerted by a gas on the wall of the container
- (b) Derive the relation between molar specific heat and degree of freedom (04)

**Q.2. B) Answer the following questions (Any two)**

- (a) Short note (03)
  1. Explain the concept of temperature.
- (b) State first law of thermodynamics (03)
- (c) State the second law of thermodynamics (03)

**Q.3. A) Essay type/ Brief note (4x2) (Each of 04 marks) (08)**

- (a) Explain internal energy
- (b) Explain Enthalpy

**Q.3. B) Answer the following questions (Any two)**

- (a) Short note (04)
  1. Explain Carnot's cycle in detail
- (b) Explain heat pump with its coefficient of performance (04)
- (c) Derive  $U_2 - U_1 = W$  (04)

**Q.4. A) Answer the following questions.**

- (a) Short note (04)
  1. Explain the Helmholtz free energy
- (b) Explain Gibbs free energy (04)

**Q.4. B) Answer the following questions (Any two)**

(a) Short note **(03)**

1.Explain black body

(b) Explain bose - Einstein distribution law **(03)**

(c) Explain Fermi - dirac distribution law **(03)**