

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN  
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)  
Chromepet, Chennai — 600 044.

B.Sc.(Physics) - END SEMESTER EXAMINATIONS APRIL-2023

SEMESTER - I

**22UPHCT1002 - Thermal Physics**

Total Duration : 2 Hrs 30 Mins.

Total Marks : 60

### Section B

Answer any **SIX** questions ( $6 \times 5 = 30$  Marks)

1. Explain the Principle and working of Electrolux refrigerator.
2. Describe Linde's process of liquefying of air.
3. Derive Dulong and Petit's law for the specific heat capacity of solids.
4. Derive Mayer's relation  $C_P - C_V = R$ .
5. Explain the various applications of Convection.
6. Explain the method of Lee's disc to determine the coefficient of thermal conductivity of a bad conductor.
7. Describe the Energy distribution in black body radiation.
8. Derive Planck's formula for the distribution of energy in the black body radiation.

### Section C

Answer any **THREE** questions ( $3 \times 10 = 30$  Marks)

9. What is Joule Thomson effect? Explain the theory of Porous plug Experiment.
10. Describe the Regnault's method of determining specific heat capacity of a gas at constant pressure  $C_P$ .
11. Discuss about the Convective equilibrium of the atmosphere. Also derive an expression for Adiabatic lapse rate.
12. Discuss the rectilinear flow of heat along a bar of uniform cross section.
13. State Stefan's law. Describe a method of determining Stefan's constant.

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