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SB—51—2022

FACULTY OF SCIENCE

B.Sc. (First Year) (Second Semester) EXAMINATION

MAY/JUNE, 2022

(New Pattern)

PHYSICS

Paper-III

(Heat and Thermodynamics)

(Monday, 13-6-2022)

Time : 10.00 a.m. to 12.30 p.m.

Time— 2.30 Hours

Maximum Marks—40

N.B. :— All questions are compulsory.

1. What are the critical constant of gas ? State and explain the van der Waals equation. Calculate the van der Waals constants a , b . 15

Or

(a) Explain the platinum resistance thermometer. 8

(b) Show that in Porous-plug experiment the total heat function remains constant. 7

2. Derive Maxwell's four thermodynamical relations. Use one of these to obtain Clausius-Clapeyron's latent heat equation. 15

Or

(a) Define mean free path and explain expression for mean free path. 8

(b) Explain the first and second Tds equation. 7

P.T.O.

3. Write short notes on (any *two*) :

10

- (i) Define any *five* types of thermometer.
- (ii) Relation between Boyle's temperature and temperature inversion.
- (iii) Inter-relation between three transport Coefficient.
- (iv) Define the following terms :
 - (a) First law of thermodynamics
 - (b) Internal energy
 - (c) Helmholtz free fnergy
 - (d) Enthalpy
 - (e) Gibbs free energy.