

**S.No. 15375 T**

**16 SCCCH 7**

(For candidates admitted from 2016–2017 onwards)

**B.Sc. DEGREE EXAMINATION, APRIL 2021**

**Part III —Chemistry—Major**

**PHYSICAL CHEMISTRY – I**

**Time : Three hours**

**Maximum : 75 marks**

**PART A — (10 × 2 = 20)**

**Answer ALL the questions.**

1.

State Lambert's Berr law.

2.

Identify the symmetry elements and point group of  $\text{NH}_3$ .

3.

Give the need for II law of thermodynamics.

4.

Define entropy.

5.

State Lechatelier's principle.

6. வேதி ஆற்றல் வரையறு.  
Define chemical potential.
7. ஹென்ரி விதியினைக் கூறுக.  
State Henry's law.
8. பிரிகை விகிதம் வரையறு.  
Define degree of dissociation.
9. நிலைமை வரையறு.  
Define phase.
10. உரைக் கலவை என்றால் என்ன?  
What is freezing mixline?

PART B — (5 × 5 = 25)

Answer ALL questions, choosing either (a) or (b).

11.

- a) Compare thermal and photochemical reactions.

Or

- b) What is symmetry operation? Explain with water molecule.

12.

- a) Bringout the different statements of II law of thermodynamics.

Or

b) Give an account on Maxwell's relations.

13.

a) Derive Gibb's – Duncum equation.

Or

b) Explain Vaint Hoff reaction isotherm.

14.

a) State and explain the principle of steam distillation.

Or

b) Write notes on osmosis and osmotic pressure.

15.

a) Deriver Gibb's phase rule.

Or

b) Explain the phase diagram of lead– silver system.

PART C — (3 × 10 = 30)

Answer any THREE questions.

16.

What is Laser? Explain its applications.

17.

Draw and explain Carnot's cycle.

18.

Derive  $K_p$  and  $K_c$  for the formation of  $\text{NH}_3$  molecule.

19.

Discuss the phase diagram of phenol water system.

20.

Draw and explain the phase diagram of water system.