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**24-CH-42**

**M.Sc. IV SEMESTER [MAIN/ATKT] EXAMINATION  
JUNE - JULY 2024**

**CHEMISTRY**  
**Paper - II**  
**[Solid State Chemistry]**

*[Max. Marks : 75]**[Time : 3:00 Hrs.]**[Min. Marks : 26]*

**Note :** Candidate should write his/her Roll Number at the prescribed space on the question paper.  
Student should not write anything on question paper.  
Attempt five questions. Each question carries an internal choice.  
Each question carries **15 marks**.

- Q. 1** Explain various theories for solid state reaction. Explain the formation of  $\text{MgAl}_2\text{O}_4$  through the Wagner Experiment alongwith the factors influencing the rate of reaction. (15 Marks)

**OR**

Discuss in detail the Kinetics of solid state reactions. (15 Marks)

- Q. 2** Explain the thermodynamics of Schottky and Frenkel defect formation in Crystal. (15 Marks)

**OR**

Write a note on **any two** - (15 Marks)

- i) Colour Centre in crystal.
- ii) Perfect and imperfect crystal.
- iii) Non stoichiometry and defects.

- Q. 3 a)** Give classification of magnetic solid materials with their characteristics. (15 Marks)
- b)** Explain Insulators.

**OR**

Explain **any two** - (15 Marks)

- i) Intrinsic and Extrinsic semiconductors.
- ii) Doping Semiconductors.
- iii) Super Conductors.

**P.T.O.**

**Q. 4** Give an account of Doped polyacetylenes as electrically conducting organic solids. (15 Marks)

**OR**

What are organic charge transfer complexes ? Why they can be considered as new superconductors. (15 Marks)

**Q. 5** Describe the types of liquid crystals and their various theories. (15 Marks)

**OR**

Write notes on - (15 Marks)

- i) Nematic liquid crystals with example.
- ii) Smectic liquid crystals with example.
- iii) Ferro Electric crystals.

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