Printed Pages – 4

# M-6343

## M.Sc. (IV$^{th}$ Semester) Examination, 2020

## CHEMISTRY

### (Solid State Chemistry)

*Time Allowed : Three Hours*

*Maximum Marks : 70*

**Note :** Attempt all five questions.

**Unit - I**

**Q. 1.** (a) Discuss the principles and uses of powder method. **10**

(b) Write notes on the crystal diffraction of X-rays. **4**

**OR**

(a) Describe the instrumentation an application of neutron diffraction. **10**





(b) Write and explain of characterization of solid. **4**

**Unit - II**

**Q. 2.** Describe the Jander's rate equation and kroger-Ziegler equation. **14**

**OR**

Write the notes on :

(i) Non stoichiometric defects. **7**

(ii) F-centre, electron and hole centre. **7**

**Unit - III**

**Q. 3.** Give brief account on the following : **14**

(a) Band structure of metals

(b) p-n junction

(c) New super conductors

**OR**

(a) What do you understand by semiconductors and insulators with suitable example. **7**

(b) Briefly describe the organic transfer complex organic metals. **7**

**Unit - IV**

**Q. 4.** (a) Explain the solid electrolytes and application of solid electrolytes. **7**

(b) Give a brief description of the Hall effect. **7**

**OR**

Write notes on following : **14**

(a) Fuel cells

(b) Alkali metal halide





**Unit - V**

**Q. 5.** (a) Describe the behaviour of substances in magnetic field. **7**

(b) Write and explain of Curie and Curie-Weiss laws. **7**

**OR**

Write notes on : **14**

(i) Photoconductivity of polymers

(ii) Ruby and neodymium

(iii) Preparation, mechanism of conduction in organic semiconductors.