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Total Pages : 3

Roll No.

MSCCH-601

Solid State and Materials Chemistry

M.Sc. Chemistry (MSCCH)

3rd Semester Examination, 2023 (June)

Time : 2 Hours]

Max. Marks : 70

Note : This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. Candidates should limit their answer to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

SECTION-A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Nineteen (19) marks each. Learners are required to answer any Two (02) questions only.

(2×19=38)

1. Write notes on : [19]
- (a) Miller Indius.
 - (b) Screw Axis.
 - (c) Glide plane.

2. Discuss the kinetics and give rate law's expressions for solid state reactions. [19]
3. Discuss the process of artificial photosynthesis scheme for capturing and storing the energy. [19]
4. Write notes on : [19]
 - (a) Organic charge transfer complexes.
 - (b) Doped fullerenes as super conductors.
5. Write notes on : [19]
 - (a) Thermodynamics of micellization.
 - (b) Optical properties of liquid crystals.
 - (c) X-ray diffraction.

SECTION-B

(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only. (4×8=32)

1. Draw the following crystal structures : simple, cubic fcc, bcc. [8]
2. What are non-stoichiometric defect ? Explain with suitable examples. [8]

3. Write about analog and digital sensor. [8]
 4. How does Bragg's law relate to X-ray diffraction ? [8]
 5. Write note on Smectic C (SmC) and chiral Smectic C (SmC*) phases. [8]
 6. Discuss the thermodynamics of micellization. [8]
 7. What are surface active agents ? How it can be classified ? [8]
 8. How do defects affect material properties ? [8]
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