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Fourth Semester Online Examination, May-June, 2022

M. Sc. CHEMISTRY

Paper I

SOLID STATE AND PHOTOCHEMISTRY

Time : Three Hours] [Maximum Marks : 80

Note : *Part A and B of each question in each unit consist of 'very short answer type questions' which are to be answered in one or two sentences. Part C 'Short answer type' and D 'Long answer type' of each question should be answered within the word limit mentioned.*

UNIT-I

1. (A) What is 'F' centre ? **2**

(B) Define Schottky defects. **2**

(C) Explain metal excess defects with example. *(Word limit 200-250)* **4**

OR

Explain metal defficiency defects with examples.

(D) Discuss thermodynamics of Schottky defects. *(Word limit 400-450)* **12**

P.T.O.

OR

Write short notes on any **two** of the following:

(a) Plane defects,

(b) Line defects,

(c) Colour centre,

(d) Organic charge transfer complex.

UNIT-II

2. (A) Give two examples of extrinsic semiconductors. **2**

(B) Define hysteresis. **2**

(C) Discuss Band theory.

(Word limit 200-250) **4**

OR

Explain photo-electric effect.

(D) Discuss quantum theory of paramagnetism.

(Word limit 400-450) **12**

OR

Describe magnetic and optical properties of solids.

UNIT-III

3. (A) Define quantum yeild. **2**

(B) What is flourescence. **2**

(C) Explain photo-oxidation reaction.

(Word limit 200-250) **4**

OR

Write the mechanism of intermolecular reaction of unsaturated carboxyl compounds.

(D) Write the mechanism of photochemical addition-substitution reaction of aromatic compounds. *(Word limit 400-450)* **12**

OR

Explain the photochemistry of inter-molecular reactions of α-β unsaturated and β-γ unsaturated compounds.

UNIT-IV

4. (A) Define photo-oxidation reactions. **2**

(B) What is photo-chemical smog. **2**

(C) Write a note on cis-trans photo-isomerisation in olefinic compounds.

(Word limit 200-250) **4**

OR

Explain Photo-Fries reaction of anilides with one suitable example.

(D) Explain the mechanism of photochemical rearrangement of 1,4 dienes.

(Word limit 400-450) **12**

OR

Write the mechanism of Borton reaction with suitable examples.

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