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Candidate's Seat No :_____

M.Sc. Sem.-1 Examination

405

Polymer Science

January-2024

Time : 2-30 Hours] **[Max. Marks : 70**

QUESTION – 1 Write the following

(i) Describe various types of conducting polymers. Explain how polymers gets conducting? **7 MARKS**

(ii) Classify the conducting polymers and explain the criteria required for its conductivity? **7 MARKS**

OR

(i) Write the type of doping in conducting polymers with example? **7 MARKS**

(ii) Explain the conduction mechanism in conducting polymers? **7 MARKS**

QUESTION – 2 Write the following

(i) Write short note on: (1) Auxochrome (2) Chromophores. **7 MARKS**

(ii) Write short note on: (1) UV-Spectrophotometer. (2) EQCM **7 MARKS**

OR

(i)Give various types of sensors? How conducting polymers helpful in sensor application? **7 MARKS**

(ii) Explain principal of photovoltaic energy cell. Explain structure for PV cell modules. Give applications for various industries? **7 MARKS**

QUESTION – 3 Write the following

(i) What is rechargeable batteries? Explain mechanism of charging and discharging for rechargeable batteries? **7 MARKS**

(ii) What are coupling reactions? Give any two examples? **7 MARKS**

OR

(i) Give difference between SEN and TEM? **7 MARKS**

(ii) Give difference between optical microscope and electron microscope? **7 MARKS**

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QUESTION – 4 Write the following

(i) Define super conductor? Explain theories of superconductors? **7 MARKS**

(ii) How FTIR helpful to detect functional groups? **7 MARKS**

OR

(i) Give mechanism for electro-chemical synthesis of polyaniline? **7 MARKS**

(ii) Give detail of Polyacetylene synthesis, Give detail about discovery of conducting polyacetylene? **7 MARKS**

QUESTION – Attempt any seven out of twelve. **14 MARKS**

(i) LED stands for ----------.

(ii) Give Suitable Example of Conducting polymer.

(iii) Give any two applications of EQCM.

(iv) Give the principal of impedance spectroscopy.

(v) Give advantage and disadvantage of SEM.

(vi) Define gas sensors and give their applications (any two).

(vii) What are the Nano structure of polymers? Give their important application (any two).

(viii) How FTIR helpful to detect functional groups?

(ix) Draw CIS and TRANS structure of Polyacetal.

(x) Name two typical properties of conducting polymer.

(xi) Write the Lambert beer equation.

(xii) Write the role of ultra-microtome.

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