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Reg. No. : .....

Name : .....

First Semester M.Sc. Degree Examination, April 2024

Chemistry / Analytical Chemistry / Polymer Chemistry / Chemistry with Specialization in Drug Design and Development

CH 211/CL 211/PC 211/CHDD 511 : INORGANIC CHEMISTRY – I

(2020 Admission Onwards)

Time : 3 Hours Max. Marks : 75

SECTION – A

Answer any **two** sub-questions among (a), (b), or (c) from each question. Each sub-question carries **2** marks.

1. (a) Which are the conditions important to explain Jahn Teller effect?

   (b) On what factors crystal field stabilization energy depends?

   (c) What are the factors that affect CFSE?

2. (a) What is Q test? 'What is its importance?

   (b) Discuss the distribution and propagation of errors.

   (c) Discuss the applications of redox titrations.

3. (a) Discuss the various types of fuel cells.

   (b) Discuss the properties and uses of inorganic phosphors.

   (c) What are one dimensional metals? Where are they used?

P.T.O.

4. (a) What are Zeolites? What are their uses?

(b) Compare the properties of polysiloxane and silicon.

(c) Discuss the structure of Perxenate ion.

5. (a) What is meant by catalytic destruction of ozone?

(b) What is hydrologic cycle?

(c) What is meant by Ion speciation in soil solution?

(10 × 2 = 20 Marks)

SECTION – B

Answer either (a) or (b) of each question. Each question carries **5** marks.

6. (a) Discuss the crystal field splitting of d orbitals in square planar field.

(b) What is the difference between crystal field theory and ligand field theory?

7. (a) What is meant by correlation analysis? Discuss the various methods used for the same.

(b) Briefly explain precipitation titrations and its applications.

8. (a) What are solid electrolytes? What are their uses?

(b) What are fullerides? How are they formed?

9. (a) Briefly explain the preparation and properties of isopoly-acids of Vanadium.

(b) Briefly discuss the coordination compounds of Xenon.

10. (a) Discuss the causes of the depletion of ozone layer.

(b) Discuss the causes of air pollution.

(5 × 5 = 25 Marks)

SECTION – C

Answer any **three** questions. Each question carries **10** marks.

11. By taking examples, explain the molecular orbital diagrams of octahedral complexes.

12. Explain the applications of TGA and DSC in the study of metal complexes.

13. Explain the formation, properties and uses of molecular materials.

14. Explain the preparation, structure, properties and uses of Tungsten based heteropoly acids.

15. Explain the chemistry of processes in lithosphere.

(3 × 10 = 30 Marks)

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