Reg. No. : ....

Name : ....

First Semester M.Sc. Degree Examination, May 2023

Chemistry/Polymer Chemistry/Analytical Chemistry

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

(2020 Admission Onwards)

Time : 3 Hours   Max. Marks : 75

SECTION – A

Answer two among (a), (b) and (c) from question. Each sub question carries **2** marks.

1. (a) Outline the splitting of d orbitals in square pyramidal complex.

   (b) Describe Nephelauxetic effect.

   (c) Calculate CFSE for d^6 ion in strong octahedral field.

2. (a) Define standard deviation.

   (b) Illustrate the importance of significant figures.

   (c) List any two indicators used for complexometric titration and explain the chemistry.

3. (a) What is molecular magnets.

   (b) Write a note on chalcogenides.

   (c) Give at least two examples for materials used as rechargeable batteries.

4. (a) How silicones are prepared? Account for their water repellent nature?

   (b) Write a note on Zeolites.

   (c) Give two examples for Xenon based coordination complexes.

5. (a) What is photochemical smog and at what condition does this occur.

   (b) What is the unique property of water?

   (c) Give any one method for quantify the soil acidity.

(10 × 2 = 20 Marks)

SECTION – B

Answer either (a) or (b) from each questions. Each sub question carries **5** marks.

6. (a) Explain Jahn-Teller effect. Discuss its spectral consequences.

   (b) Explain the drawback of crystal field theory.

7. (a) Compare the method of averages and the method of least square for treatment of analytical data.

   (b) Explain the various types of EDTA titrations.

8. (a) What are SOFCs?

   (b) Write a note on inorganic pigments.

9. (a) Briefly discuss the synthesis and structures of different isopolyanions of Mo and W.

   (b) Explain the structure and applications of aluminosilicates.

10. (a) Brief note on catalytic destruction of ozone. What are the major reasons for ozone layer depletion?

    (b) Write a note of hazardous air pollutants and how they affect human health.

(5 × 5 = 25 Marks)

SECTION – C

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

11. Construct MO diagram of octahedral complexes with and without pi bonding and explain the theory behind it.

12. Write a note on classification of errors in treatment of analytical data.

13. What are the peculiarities of solid electrolytes? Explain with example.

14. Give the structure of Xenon fluorides and organo xenon compounds.

15. Explain the hydrologic cycle.

(3 × 10 = 30 Marks)

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