

Register Number :

Name of the Candidate :

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M.Sc. DEGREE EXAMINATION, 2011

(CHEMISTRY)

(SECOND YEAR)

(PAPER - VIII)

220. INORGANIC CHEMISTRY - II

(Including Lateral Entry)

December] [Time : 3 Hours

Maximum : 125 Marks

Answer ALL questions from Part- A and Part -B.

Answer any THREE questions from Part -C.

ALL questions carry equal marks.

PART - A (5×3=15)

1. What are the important sources of radioactive wastes?
2. What is meant by 'isomer shift' in Mossbauer spectroscopy?

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3. What is trans effect? Give its importance.
4. Distinguish between interhalogens and pseudohalides.
5. What are *in-vivo* and *in-vitro* nitrogen fixation?

SECTION - B (3× 20=60)

6. (a) State and explain the principle and applications of amperometric titrations.

(OR)

- (b) Explain briefly the principle and applications of anodic stripping voltammetry.

7. (a) What is unit cell? Write the principle and applications of powder X-ray diffraction analysis.

(OR)

- (b) State the principle of electron and neutron diffractions. Explain the important applications of these two techniques.

14. (a) Discuss briefly the iso and heteropoly acids with suitable examples. (10)
- (b) Explain briefly the various methods of preparation of nanocrystals. How are they characterised? (10)
15. (a) Discuss the structural correlations of axial haloketone rule. (10)
- (b) How are the following present in the soil analysed? (10)
 - (i) Moisture.
 - (ii) Silica.
 - (iii) Magnesia.
 - (iv) Total nitrogen.

- (b) Explain the principle and instrumentation of super critical fluids chromatography.

PART - C (3 × 20= 60)

11. (a) What is meant by Coulometry? Discuss briefly the controlled potential coulometry and constant current coulometry. (10)
- (b) How do pesticides affect the environment? Explain their dangerous health effect to human beings. (10)
12. (a) Discuss the principle and applications of Auger spectroscopy. (10)
- (b) How will you distinguish between Sn(II) and Sn(IV) compounds by MB spectrum? Discuss the effect of magnetic field on MB spectrum. (10)
13. (a) Discuss the theory and mechanism of kinetic substitution of Pt(II) complexes. (10)
- (b) What are the acid hydrolysis and base hydrolysis reactions? Discuss the mechanisms with suitable examples. (10)

8. (a) Write a brief account on one electron and two electron transfer reactions with suitable examples.

(OR)

- (b) Compare the terms liability, inertness with stability and instability. Explain the nature of substitution reactions.

9. (a) (i) What are carbides? How are they prepared? Mention their important properties.

- (ii) What are phosphazenes? How are they prepared? Discuss the structure of $(\text{NPCl}_2)_3$.

(OR)

- (b) What are silicones? How are cyclic and cross-linked silicones prepared? explain their structures.

10. (a) What are fuels? How are they classified? Describe briefly the various characteristics of fuels.

(OR)

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