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Register Number:

Name of the Candidate:

B.Sc. DEGREE EXAMINATION, May 2015

(APPLIED CHEMISTRY)

(FIRST YEAR)

(PART-III)

(GROUP-A: MAIN)

530: INORGANIC CHEMISTRY

Time: Three hours Maximum: 100 marks

Answer One Full Question from each Unit **(5×20=100)**

UNIT-I

1. a) How does calcination differ from roasting? Illustrate using suitable example. (6)
   b) Give an account for the Pulverisation method in ore dressing. (8)
   c) Explain aluminothermic process and van Arkel de Boer's method with suitable example. (6)

(OR)

2. a) Discuss the role and types of flux in metallurgy. (7)
   b) Write an explanatory note on gravity separation method during ore dressing. (6)
   c) How is iron extracted from its ore? (7)

UNIT-II

3. a) Derive an expression for mass energy relationship. (7)
   b) Explain the principle underlying the function of hydrogen bomb. (6)
   c) Write short notes on cyclotron and half-life period. (7)

(OR)

4. a) Discuss the theory of radioactive disintegration with suitable examples. (8)
   b) List out the various nuclear reactors in India. (6)
   c) Outline the applications of radioisotopes in agriculture and medicine. (6)

UNIT-III

5. a) State the reason for the following: (3)

   i) NH_2^- is better base than PH_2^- towards proton.

   ii) PCl_5 is a better Lewis acid than PCl_3 (4)

   b) Enumerate the factors which govern the hardness and softness in acids and bases. (6)

   c) Explain the classification of non-aqueous solvents and describe their salient features. (7)

(OR)

6. a) Discuss the chemistry of liq.NH_3 as a solvent. What are the advantages and disadvantages of liq NH_3? (8)

   b) Explain the Lux-Flood concept of acids and bases. (6)

   c) What are levelling solvents? What are they called so? (6)

UNIT-IV

7. a) Draw the structure for the following Octahedral complexes. (6)

   i) $[CoCl_2(NH_3)_4]^+$ ii)$[CoBrCl(en)_2]^+$ iii)$[CoCl(H_2O)_4(NH_3)]^{2+}$

   b) Discuss VBT of co-ordination compounds. Explain the different geometric and magnetic characters on the basis of this theory with suitable example. (8)

   c) Explain the theory of MO configuration for heterogeneous diatomic molecule. (6)

(OR)

8. a) What are the various types of isomerism exhibited by co-ordination compounds? Write in detail giving examples. (8)

   b) Give an elementary idea of CFT and explain the splitting of d-orbitals in tetrahedral complexes. (6)

   c) Discuss the polarography method to determine the stability constant of complexes. (6)

UNIT-V

9. a) Describe the composition, properties and applications of copper alloys. (8)

   b) Give the manufacturing process of ceramics. (6)

   c) Explain the various types of corrosion relevant to chemical industry. (6)

(OR)

10. a) Account for the composition of alloys of aluminium. Give their applications. (7)

    b) Give the composition, properties and applications of the alloys to titanium. (6)

    c) What is corrosion? Discuss any two methods to prevent corrosion. (7)

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