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8671/M

BS-2057

INORGANIC CHEMISTRY-I

(Common for B.Sc. Biotech Semester -IV)

Time Allowed : 3 Hours] [Maximum Marks : 26

Note : The candidates are required to attempt **two** questions each from Sections A and B carrying 4 marks each and the entire Section C consisting of 5 short answer type questions carrying 2 marks each.

SECTION—A

1. How does Werner's co-ordination theory account for nonionic nature of the complex $CoCl_3.3NH_3$?

2. Determine the Effective Atomic Number (EAN) of a the metal in each of the following coordination compounds or complex ions :

   (a) $[Cu(NH_3)_4]^{2+}$

(b) $[Ag(NH_3)_2]^+$

(c) $[Fe(CN)_6]^{4-}$

. (d) $Mo(CQ)_6$

(e) $[Fe(C_2O_4)3]^{3-}$

Which of these species follow the EAN Rule?

3. Discuss the valence bond theory of transition metal complexes. Give its limitations.

4. What are Pourbaix diagram? To what use are they put? Explain giving examples.

SECTION—B

5. Discuss the Lewis concept of acids and bases.

6. Discuss the Lux-Flood solvent system for acids and Bases.

7. Discuss the chemistry of hq. NH_3 as a solvent.

8. Discuss the advantages and disadvantages of liq. SO_2 as a solvent.

SECTION—C

9. Write brief answers :

(a) Why do square planar complexes not show optical isomerism?

(b) Define the term stability field of water.

(c) Why solutions of alkali metals in liq. NH_3 are highly conducting?

(d) Discuss the effect of solvent on the relative strength of acids and bases.

(e) Why strong oxidising agents do not exist in liquid ammonia?