# UG (CBCS) EVEN SEMESTER EXAMINATION, 2023

**EDUCATION (B.Sc. B.Ed.)**

CHEMISTRY (HONOURS)

4th Semester

Course No. : BSCH - 401

**( Inorganic Chemistry )**

Full Marks : 50

Pass Marks : 20

Time : 2 hours

*The figures in the margin indicate full marks for the questions*

1. (a) Write down the primciple of ion exchange method of analysis. How lanthanides can be separated by this techniques. 3+4=7

   (d) Write down the principle of flame photometry. 3

Or

2. (a) Write a detailed note on portland cement. 5

   (b) Write a note on the manufacturing process of nitrolim. 5

3. (a) Consider the covalent bonding in the diatomic hydrogen molecule and justify why of all sharing of electrons gives mise to the formation of a stable bond. 5

(b) Write a brief account on valance bond theory. 5

Or

4. (a) Using VSEPR theory nationalize why $Bcl_3$ and $Ncl_3$ do not adopt similar structure? 3

(b) Which of the following in each pain will have the langer bond angles?
$NH_3$ , $NF_3$ ; $OF_2$ , Ocl ; $PH_3$ , $NH_3$ 3

(c) Write a brief note on dipole-dipole interaction. 4

5. (a) Write brief notes on n-type and p-type semiconductors with suitable examples. 4+4

(b) Define insulator with example. 2

Or

6. (a) Describe Drude-Lorentz theory of metals. 6

(b) 'Peroxide anion is diamagnetic in nature'. Justify using MO diagram. 4

7. (a) Write down the IUPAC name and structure of the following complexes :
$[WF_5N(CH_3)_2]$ and $(NH_4)_2[VO(C_2O_4)_2]$ 2+2=4

(b) How to stabilize the less familian higher and lower oxidation states of first row transition metal (include one example each)? 3+3=6



Or

8. (a) Write a brief note on porphymin ligand (include structure). 3

(b) Give name and structure of one hexadentate ligand. 2

(c) Write a detailed note on stercoismerism of coordination complexes. 5

9. (a) Write down the postulates of Molecular Orbital Theory (MOT). 5

(b) Although oxygen is more electronegative than carbon in the CO molecule, why the negative end of the dipole is on the C atom? Justify with MO diagram. 3

(c) Define overlap integral. 2

Or

10. (a) Write a detailed note on greenhouse effect. 5

(b) What is pH? 2

(c) Write a brief note on the toxic effects of Hg. 3

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