UG (CBCS) EVEN SEMESTER EXAMINATION, 2024

EDUCATION
(B.Sc. B.Ed.)

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) How colorimetric determination of a coloured sample is done by using Lambert-Beer's law? 5

   (b) What is ion-exchange method? Write down important applications of ion-exchange method. 2+3=5

Or

2. (a) Write a brief note on the manufacturing process of red lead. 5

   (b) What is triple superphosphate? How it can be prepared? 2+3=5

3. (a) How does the idea of spin pairing appears essential in the valence bond approach to the hydrogen (H_2) molecule. 5

(Turn Over)

(b) With suitable example state the meaning of canonical structure. 1+2=3

(c) Draw the resonance hybrid structure of CO_3^{2-}. 2

Or

4. (a) Write a detailed note on VSEPR theory. 6

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

5. (a) Write a short note on band theory of solids. 5

(b) Write a detailed note on intrinsic semiconductor. 5

Or

6. (a) Write distinctive features of peroxide and superoxide. 4

(b) Explain why Caro's acid is a monobasic acid? 2

(c) Write a brief note on Marshall's acid. 4

7. (a) Write down the molecular formula of a double salt. 2

(b) Write down the IUPAC name of $[WF_5(NCH_3)_2]$ and $(NH_4)_2\ [VO(C_2O_4)_2]$. 2+2=4

(c) Write a short note on hydrate isomerism. 4

Or

8. (a) A polydentate ligand may not use all its donor centres for complexation. Comment. 3'

(b) Write down the structure of "purely inorganic" optically active compound, $[Co\{Co(NH_3)_4\ (OH)_2\}_3]^{6+}$. 2

(c) Write a brief note on macrocyclic ligand. 5

9. (a) Constructing the molecular orbital diagram of CO and O_2 give their ground state electronic distribution. 3+3=6

(b) Using the obtained MO diagram of O_2 justify the following trend in 0-0 bond distances : 4

O_2 - 121 pm

$[O_2]^+$ - 112 pm

$[O_2]^-$ - 134 pm

$[O_2]^{2-}$ - 143 pm

Or

10. (a) Write a brief note on any two among the following: 3+3=6

(i) Radioactive fallout

(ii) Acid rain

(iii) Ozone layer depletion

(iv) BOD

(b) Write down the toxic effects of Pb. 4

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