Reg. No…… Name…… **26U4126**

B A, BSC, BCOM DEGREE END SEMESTER EXAMINATION – MARCH 2026

UGP (HONS.) SEMESTER – 4: DISCIPLINE SPECIFIC COURSE

COURSE: 24UCHEDSC204 – INORGANIC CHEMISTRY - II

(For Regular 2024 Admission)

Time: 1.5 Hours Max. Marks: 50

PART A

One Word Questions

Answer all questions. Each question carries 1 Marks

1. What is the shape of ClF_3 according to VSEPR theory? (U, CO1)
2. Define lattice energy of an ionic compound. (U, CO1)
3. What type of intermolecular force exists between HCl molecules? (U, CO1)
4. Name the species formed in autoionization of liquid ammonia. (A, CO2)
5. Define mass defect. (An, CO3)
6. What is K-electron capture? (An, CO3)
7. Define artificial radioactivity with example. (An, CO3)
8. Mention the use of any two radioactive isotopes in diagnosis/treatment of diseases. (An, CO3)

(1 x 8 = 8)

PART B

Short Answer Questions

Answer any five questions. Each question carries 3 Marks

9. Write down the Born–Haber cycle for NaCl. (U, CO1)
10. Compare the bond length and bond energy of O_2, O_2^+ or O_2^- (U, CO1)
11. Explain the effect of hydrogen bonding on boiling point by comparing H_2O and H_2S. (U, CO1)
12. Describe protic and aprotic solvents? Give examples. (A, CO2)
13. Discuss any 3 important reactions in liq. HF. (A, CO2)
14. State the group displacement law in radioactive disintegration. How many alpha and beta particles are emitted during the radioactive disintegration of Pu^{241} to Bi^{209}? (An, CO3)
15. What do you mean by breeder reactor? Explain. (An, CO3)
16. Explain Gieger-Nuttall rule. (An, CO3)

(3 x 5 = 15)

PART C

Short Essay Questions

Answer any two questions. Each question carries 6 Marks

17. Making use of the concept of hybridization, discuss the shapes of a) $BeCl_2$ b) BF_3 c) CH_4 (U, CO1)

18. How does the band theory explain the electrical and thermal conductivities of metals? (U, CO1)

19. Write a short note on liquid Sulphur dioxide as a solvent. (A, CO2)

20. Explain the acid–base concept in non-aqueous solvents. (A, CO2)

(6 x 2 = 12)

PART D

Long Essay Questions

Answer any one question. Each question carries 15 Marks

21. Explain Molecular Orbital Theory (LCAO). Draw MO diagrams of N_2 and O_2. Comment on their bond order and magnetism. (U, CO1)

22. Briefly describe on

    (a) Radiometric titrations (b) Radiocarbon dating (c) Neutron activation analysis. (An, CO3)

(1 x 15 = 15)