

B.Sc. DEGREE END SEMESTER EXAMINATION - MARCH 2020**SEMESTER –2: CHEMISTRY (CORE COURSE)****COURSE: 19U2CRCHE2: THEORETICAL AND INORGANIC CHEMISTRY-II***(For Regular - 2019 Admission)*

Time: Three Hours

Max Marks: 60

SECTION A***Answer all questions, each question carries 1 mark***

1. What is the principle of paper chromatography?
2. Give an example of polar covalent bond.
3. The conductivity of alkali metal in ammonia is due to
4. Write down the Born-Landé equation and explain the terms.
5. Give the shape and geometry of XeF₄.
6. Write down equation for Mullikan scale of electronegativity.
7. State Bronsted-Lowry concept of acids and bases.
8. Define Lattice energy

(1 × 8 = 8)**SECTION B*****Answer any six questions, each question carries 2 marks***

9. Discuss the acid base reaction and complex formation in liquid HF.
10. Which has more electron affinity Chlorine or Fluorine and why?
11. Give the principle and an application of solvent extraction.
12. How are reactivity and ionization enthalpy related? Illustrate with an example.
13. Give any two limitations of VBT.
14. What is meant by dispersive forces? Why is it called so?
15. Why do silver halides have lower solubility in water?
16. What is leveling effect?

(2 × 6 = 12)**SECTION C*****Answer any four questions, each question carries 5 marks***

17. State Slater's rule and give an application.
18. Compare the bond length, magnetic behavior and bond energy of O₂, O₂⁺, O₂²⁺, O₂⁻ and O₂²⁻.
19. State the rule used to explain the covalency in ionic bond and give its applications.
20. Explain the hybridisation in PCl₅ and XeF₆.

21. What is hydrogen bonding? Explain its effect on physical properties.
22. Explain HSAB theory. (5 × 4 = 20)

SECTION D

Answer any two questions, each question carries 10 marks

23. Write a note on a) HPLC b) ion exchange chromatography.
24. Write a note on the theories of metallic bonding and detail the explanation of metallic properties based on these theories.
25. (a) Draw the MO energy level diagram of NO⁺ molecule and explain its properties.
(b) compare VB and MO theories.
26. Write the various steps involved in the gravimetric estimation of iron as ferric oxide. (10 × 2 = 20)