K26FY1218 Pages: 2 Reg No:.....
Name:.....

Second Semester FYUGP Degree (Reg/Sup/Imp) Examination April 2026

KU2DSCCHE101 - FUNDAMENTALS OF CHEMISTRY - II

2024 Admission onwards

Time : 1.5 hours Maximum Marks : 50

Section A

Answer any 6 questions. Each carry 2 marks.

1. Classify the following cations as Hard and soft acid Na^+, Ag^+, H^+, Hg^+
2. What is the solvent-system concept of acids and bases?
3. How does the size of ions affect the formation of ionic compounds?
4. Write Born-Lande equation?
5. What is a molecular crystalline solid? Give two examples.
6. What is Frenkel defect?
7. Explain tautomerism with example
8. Why is tertiary methyl cation more stable than primary carbocation?.

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Section B

Answer any 4 questions. Each carry 6 marks.

9. How are crystalline solids classified based on the type of bonding between particles? Describe briefly.
10. Calculate of the radius of a body centred cubic unit cell (BCC) with an edge length of 'a'.
11. Differentiate between stoichiometric and nonstoichiometric defects with suitable examples.
12. a) Which one out of acetic acid and formic acid is more acidic and why?
    b)Between bromoacetic acid and chloroacetic acid, which is stronger and why ?
13. Compare the basic strength of aniline, N- methylaniline and N, N-dimethyl aniline. Justify your answer.
14. a) Compare the stability of primary, secondary and tertiary carbanions
    b) Compare the stability of primary, secondary and tertiary free radicals.

Section C

Answer any 1 questions. Each carry 14 marks.

15. (a) Explain Arrhenius Theory,and Lowry Brosted Theory of Acids and Bases with suitable examples. Illustrate the neutralization reactions based on these theories.

    (b) State and Explain HSAB principle. Write down the applications of HSAB principle. Give reason for Hard-Hard and soft-soft interactions.

16. (a) Explain the formation of a covalent bond using Valence Bond Theory taking a suitable example. Discuss the limitations

    (b) Draw the molecular orbital diagram of NO and HCl. Calculate the bond orders.

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