K25FY4522 Pages: 2 Reg No:.....
Name:.....

First Semester FYUGP Degree (Reg/Sup) Examination November 2025

KU1DSCCHE114 - BASIC CONCEPTS IN THEORETICAL AND ENVIRONMENTAL CHEMISTRY

2024 Admission onwards

Time : 1.5 hours Maximum Marks : 50

Section A

Answer any 6 questions. Each carry 2 marks.

1. Write Rydberg formula and explain the terms.
2. What is the Balmer series? In which region of the electromagnetic spectrum does the Balmer series appear?
3. What does the term Precision mean in an analytical determination?
4. Which type of error can be corrected by adjusting the measuring instrument?
5. What is the shape of sulfur hexafluoride (SF_6)? Explain using VSEPR theory.
6. What role do hydrogen bonds play in the structure of water?
7. What do you mean by eutrophication?
8. Name some ionizing radiations.

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Section B

Answer any 4 questions. Each carry 6 marks.

9. Discuss sp^3d^2 hybridization and d^2sp^3 hybridization with an example.
10. Describe the shape of PCl_5 based on VSEPR theory. (3)
    Using VSEPR theory, explain the octahedral geometry of SF_6. (3)
11. Explain how Molecular Orbital Theory accounts for the bond order in diatomic molecules like O_2. (3)
    How do hydrogen bonds affect the boiling and melting points of compounds? (3)
12. How can industrial effluents be treated to minimize their toxic effects on aquatic life?
13. Discuss the importance of ozone layer and What are the causes and consequences of ozone layer depletion

14. Compare and contrast the effects of different types of air pollutants on human and plant health.

Section C

Answer any 1 questions. Each carry 14 marks.

15. (a) Explain the merits and demerits of the long form of the periodic table.
    (b) Explain how and why the properties like ionic radii, ionisation potential and electronegativity change across a period and down the group

16. (a) Explain the simple first aid procedures that must be administered to victims if they suffer burns from heat, acids, alkalies, phenol and bromine
    (b) Explain different hazardous symbols and signs.

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