K25FY3120 Pages: 2 Reg No:.....
Name:.....

Third Semester FYUGP Degree Examination NOVEMBER 2025

KU3DSCCHE201 - INORGANIC CHEMISTRY-I

2024 Admission onwards

Time : 1.5 hours Maximum Marks : 50

Section A

Answer any 6 questions. Each carry 2 marks.

1. Why does the acidic character of oxides increase across a period in the p-block?
2. What is the difference between electron-deficient and electron-precise hydrides? Give one example of each.
3. What are particle accelerators? Give one example.
4. Define Packing Fraction. What is its significance
5. State one use of the Q-test in analytical chemistry.
6. Name two interfering acid radicals that hinder the precipitation of Group III cations.
7. Write the hybridization of central metal in $[Ni(CO)_4]$.
8. Draw the splitting of d orbitals in an octahedral field.

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Section B

Answer any 4 questions. Each carry 6 marks.

9. Explain how the Q-test is applied to reject doubtful data. Illustrate with an example dataset
10. A set of five replicate titration values are given: 25.2, 25.0, 25.1, 25.3, 25.0 mL. Calculate the mean, and average deviation from the mean.
11. Explain the application of solubility product in the intergroup separation of cations?
12. Explain the main postulates of VB theory and list out its drawbacks.
13. Explain crystal field splitting in octahedral field with suitable diagram
14. Why is $[Ni(CO)_4]$ colourless while $[Ni(H_2O)_6]^{2+}$ is coloured? Apply crystal field theory to explain.

Section C

Answer any 1 questions. Each carry 14 marks.

15. Discuss the structures of fluorides and oxofluorides of Xe in various oxidation states.

16. Explain binding energy and mass defect. Derive the relation between them and explain how they account for nuclear stability.

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