

24U122

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Name :

Reg. No :

FIRST SEMESTER UG DEGREE EXAMINATION, NOVEMBER 2024

(FYUGP)

CC24U CHE1 MN106 - COORDINATION CHEMISTRY

(B.Sc. Chemistry - Minor Course)

(2024 Admission - Regular)

Time: 2.0 Hours

Maximum: 70 Marks

Credit: 4

Part A (Short answer questions)

Answer *all* questions. Each question carries 3 marks.

1. What is the oxidation state of phosphorus in H_3PO_2 ? [Level:1] [CO1]
2. Explain the trend in metallic character as you move down the s-block elements. [Level:2] [CO1]
3. How is chlorine trifluoride (ClF_3) prepared? [Level:1] [CO1]
4. What is lanthanide contraction? [Level:1] [CO2]
5. What is the most common oxidation state of transition metals? [Level:1] [CO2]
6. What is crystal field stabilization energy [CFSE]? [Level:1] [CO4]
7. Give two merits of CFT. [Level:1] [CO4]
8. Explain the merits of VBT. [Level:2] [CO4]
9. Name two carbonyl which obey 18 electron rule. [Level:1] [CO5]
10. What are metal carbonyls? [Level:2] [CO5]

(Ceiling: 24 Marks)

Part B (Paragraph questions/Problem)

Answer *all* questions. Each question carries 6 marks.

11. How does cyanogen $(\text{CN})_2$ compare to halogens in terms of chemical properties? [Level:2] [CO1]
12. Explain the trend in thermal stability of sulphates and carbonates across the p-block elements. [Level:2] [CO1]
13. Briefly describe the uses of diborane (B_2H_6). [Level:2] [CO1]
14. Explain the significance of beach sands in Kerala for the occurrence and extraction of lanthanides. [Level:2] [CO2]

15. Write a note on spectrochemical series. [Level:2] [CO4]
16. Discuss ambidentate ligands and provide examples. [Level:2] [CO3]
17. What is the EAN rule? Explain its significance with an example. [Level:1] [CO4]
18. Explain the properties of ferrocene. [Level:2] [CO5]

(Ceiling: 36 Marks)

Part C (Essay questions)

Answer any *one* question. The question carries 10 marks.

19. Define isomerism and explain the different types of stereoisomerism in coordination chemistry with detailed examples. [Level:2] [CO3]
20. Discuss the following concepts in detail (a) magnetic moment of complexes and (b) colour of complexes. [Level:2] [CO4]

(1 × 10 = 10 Marks)
