Reg. No..... Name.....

M.SC DEGREE END SEMESTER EXAMINATION NOVEMBER 2016

SEMESTER – 1: CHEMISTRY

COURSE: 16P1CHET01-16P1CPHT01 : INORGANIC CHEMISTRY

Time: Three Hours Max. Marks: 75

SECTION A

*Answer **any** **ten** questions. Each question carries **2** marks*

1. Is $Mo(CO)_7$ likely to exist? Give reasons.

2. What is Wade-Mingos rule? What is its significance?

3. What is meant by hapticity? Explain with a suitable example.

4. $V(CO)_6$ reasonably stable; but is readily reduced to $[V(CO)_6]^-$. Give reason.

5. Define metathesis with example

6. Free cyclobutadiene is unstable whereas $[Fe(CO)_3(\eta^4\text{-}C_4H_4)]$ is stable. Why?

7. What changes occur in ethylene molecule on binding to Zeise's salt?

8. Electron capture generally accompanies β^+ decay. Substantiate.

9. What are photonuclear reactions? How is it classified?

10. Differentiate between fast fission factor and fast neutron loss factor

11. Oxy form of hemocyanin is blue and deoxy form is colorless. Why?

12. What are siderophores? How is it classified?

13. What is cytochrome P450? Why it is named so?

(2 x 10 = 20)

SECTION B

*(Answer **any five** questions. Each question carries **5** marks)*

14. What is Transferrin? How does it function?

15. What is Ca^{2+}pump? What is its significance?

16. What are breeder reactors? Discuss its principle.

17. Discuss various factors which determine the mass and charge distributions of fission products.

18. Define isolobal analogy. Is $Fe(CO)_4$ is isolobal with methylene? Explain.

19. Cobaltocene gets easily oxidized to cobaltocenium cation. Why?

20. Draw the catalytic cycle for Monsanto acetic acid process.

21. Write a brief note on catalytic isomerization of alkenes.

(5 × 5 = 25)

SECTION C

*(Answer **any** **two** questions. Each question carries **15** marks)*

22 (a) What is co-operativity? How do you explain this phenomenon by Hill equation and Hill plot?

(b) What is cis-platin? Discuss the mechanism of action of cis-platin and the biological

consequences of platinum –DNA binding?

23. What are oxidative addition reactions? Predict the rates in the increasing order for the oxidation reaction between CH_3I and $[XIr(CO)_2(PPh_3)_2]$ when X changes as F, Cl, Br and I.

24. What are carbonyl clusters? How are they classified? Discuss the structure of $[Re_2Cl_8]^{2-}$.

25. (a) What is radiometric titration? How is it carried out?

(b) Discuss briefly the working of a scintillation counter. Discuss how the quenching and luminescence affect the accuracy of the measurement

(15 × 2 = 30)

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