20100424

QP CODE: 20100424

Reg No : .....

Name : .....

BSc DEGREE (CBCS) EXAMINATION, MARCH 2020

Sixth Semester

Core course - CH6CRT09 - INORGANIC CHEMISTRY

B.Sc Chemistry Model I, B.Sc Chemistry Model III Petrochemicals, B.Sc Chemistry Model II Industrial Chemistry

2017 Admission Onwards

5F56CE9B

Time: 3 Hours Maximum Marks :60

Part A

*Answer any **ten** questions.*

*Each question carries **1** mark.*

1. Give one example each for cationic, anionic and neutral ligands.
2. Sketch the geometrical isomers of Ma_2bc type coordination complexes
3. What are labile and inert complexes?
4. What is the hybridisation and geometry of the complex $[Pt(NH_3)_4]^{2+}$?
5. How does oxidation state of the metal ion affect crystal field splitting in complexes?
6. Give the equation for calculating spin only magnetic moment value.
7. Which are the theories supporting trans effect?
8. What is sigma bonded organometallic compounds? Give example.
9. Draw the structure of $Mo(CO)_6$.
10. Calculate the EAN for $Fe_2(CO)_9$.
11. Besides histidine group, Zn in carbonic anhydrase is coordinated to which group.
12. What are pseudo halide ions? Give one example.

(10×1=10)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Discuss Werner's coordination theory in detail.

14. What is crystal field splitting? Explain Crystal Field Splitting in tetragonal complexes.

15. Explain the application of coordination complexes in quantitative analysis.

16. Describe bonding in metal-alkene complexes.

17. (a) What is Zeigler Natta catalyst? What is it used for? Mention its advantages.(b) What is Wilkinson's catalyst? What are its uses and advantages?

18. Explain the biological functions and toxicity of mercury.

19. Explain the different properties of diboranes.

20. Write a short note on chlorine monofluoride.

21. Explain the preparation, properties and structure of XeF_2.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **10** marks.*

22. (i) Explain sigma bonding of octahedral complexes using Molecular orbital theory? (ii) Draw Molecular orbital diagram for $[Co(NH_3)_6]^{3+}$ and predict its magnetic property.

23. Describe and justify the preferred mechanism for ligand substitution reactions in square planar complexes

24. Explain the synthesis, properties and bonding in Ferrocene.

25. Write a short note on (a) cooperativity and Bohr effect in Hb (b) Vitamin B12

(2×10=20)