Reg. No……..…….. Name…… **14U506**

B.Sc. DEGREE END SEMESTER EXAMINATION OCTOBER/NOVEMBER 2018

SEMESTER –5: CHEMISTRY (CORE COURSE)

COURSE: U5CRCHE5: CHEMISTRY OF D AND F BLOCK ELEMENTS

(For Supplementary - 2014 admission)

Time: Three Hours Max. Marks: 60

SECTION A

*Answer **all** questions. Each question carries **1** mark*

1. How is water gas synthesized?
2. Name the prosthetic group present in Hb and Mb.
3. EAN value for $Os(CO)_5$ is ……
4. Oxidation state of a Nickel in Nickel tetra carbonyl is ……..
5. IUPAC name of the complex $K_3[Fe(CN)_6]$ is……..
6. The first transition series begins with…….
7. Geometry of $[Zn(NH_3)_4]^{2+}$ is …….
8. Which is more stable Cu^+ or Cu^{2+}. (1 × 8 = 8)

SECTION B

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

9. What are the fundamental postulates of Werner's coordination theory?
10. What is lanthanide contraction?
11. Find the magnetic moment of Ti^{3+} and Mn^{2+} ions in presence of weak ligands.
12. Explain linkage isomerism with an example.
13. Give the structure of $Mn_2(CO)_{10}$
14. What are π-acceptor ligands?
15. What is CFSE? Find CFSE of d^2 configuration in tetrahedral field.
16. What is Na/K pump? (2 x 6 = 12)

SECTION C

*Answer **any four** questions. Each question carries **5** marks*

17. Give the splitting of d-orbitals in square planar field.
18. What is stability constant? Mention the factors that affect the stability of a complexion.
19. Why do transition metals show variable valency?
20. Write a note on Zeigler- Natta catalyst.
21. Explain the absorption spectra of $[Ti(H_2O)_6]^{3+}$ ion.
22. Give the mechanism of oxygen binding in haemoglobin. (5 × 4 = 20)

SECTION D

*Answer **any two** questions. Each question carries **10** marks*

23. What is crystal field theory? How does it differ from valence bond theory? How does it explain the magnetic properties of coordination compounds?
24. Discuss the mechanism of oxygen transport in blood.
25. Write a note on the general characteristics of transition elements
26. Discuss the splitting of d orbitals in octahedral, tetrahedral and square planar fields according to crystal field theory. (10 × 2 = 20)

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