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NEPRT—101—2024

FACULTY OF SCIENCE

M.Sc. (NEP) (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2024

CHEMISTRY

Paper : SCHEC-1451

(Inorganic Chemistry)

(Thursday, 18-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—80

N.B. :— (*i*) Question number *one* is compulsory. Solve any *three* from remaining five.

(*ii*) Calculator and log table is allowed.

1. (*a*) What is Fischer-Tropsch synthesis ? Give its mechanism. 5

(*b*) Explain the importance of sulphur oxide dismutase. 5

(*c*) Calculate the number of EPR line shown by X band EPR spectra of . CH_2OH radical. 5

(*d*) Prove that $Mn_2(CO)_5$ and C_2H_6 are isolobal with each other. 5

P.T.O.

2. (*a*) What is Waker's process ? Discuss its mechanistic aspect. 10

(*b*) If fundamental frequencies of $^{35}Cl_2$ is 564.9 cm^{-1}. What will be force constant of its in Nm^{-1} ? 10

(Avogadro's No. = 6.022×10^{23})

3. (*a*) Explain Mossbauer spectrum of $Na_2[Fe(CN)_5\ NO]$. 10

(*b*) What are frontier orbitals ? Explain ML_6 complex is isolobal with CH_4 and ML_5 complex is isolobal with CH_3 radical. 10

4. (*a*) Discuss the mechanism of hydroformulation of olefins using cobalt salt. 10

(*b*) Give an account of structure and function of Hemoglobin. 10

5. (*a*) What is Photosynthesis ? Explain in detail photosystem-II. 10

(*b*) Calculate the number of lines in : 10

(*i*) Naphthalene radical

(*ii*) Anthracene radical.

6. Write notes on :

(*a*) Ziegler Natta Catalyst. 5

(*b*) Nitrogenase enzyme. 5

(*c*) Mossbauer spectrum of $FeSO_4.7H_2O$. 5

(*d*) Isolobal analogy. 5