SE- SEM III

Q.P. Code :24014

CBCGS

CHEM - EC-I

[Time: 3 Hours] **[Marks: 80]**

09

Please check whether you have got the right question paper.

N.B: 1. Question No. 1 is compulsory.
2. Attempt any three questions from remaining five questions

BL-10

Answer any four of the following **20**

a) Explain the structure of X_eF_4 on the basis of VSEPR Theory.

b) Write IUPAC names of the following co-ordination compounds –

i) $[Zn(NCS)_4]^{2-}$
ii) $[Ag(NH_3)]Cl$

c) Explain preparation, properties and bonding involves in $Fe(CO)_5$.

d) Differentiate between transition state and intermediate.

e) Compare the stability of tertiary, secondary, primary and methyl carbocation. Justify your answer using inductive effect and hyper conjugation.

f) Define Quantum yield. Explain the reasons for high quantum yield.

a) What is photolysis? Explain Norrish type-I and Norrish type II with mechanism. **5**

b) Write the chemical formula of the following co-ordination compounds- **5**

i) Potassiumhexacyanoferrate (II)
ii) Tetracyanonickelate (II) ion

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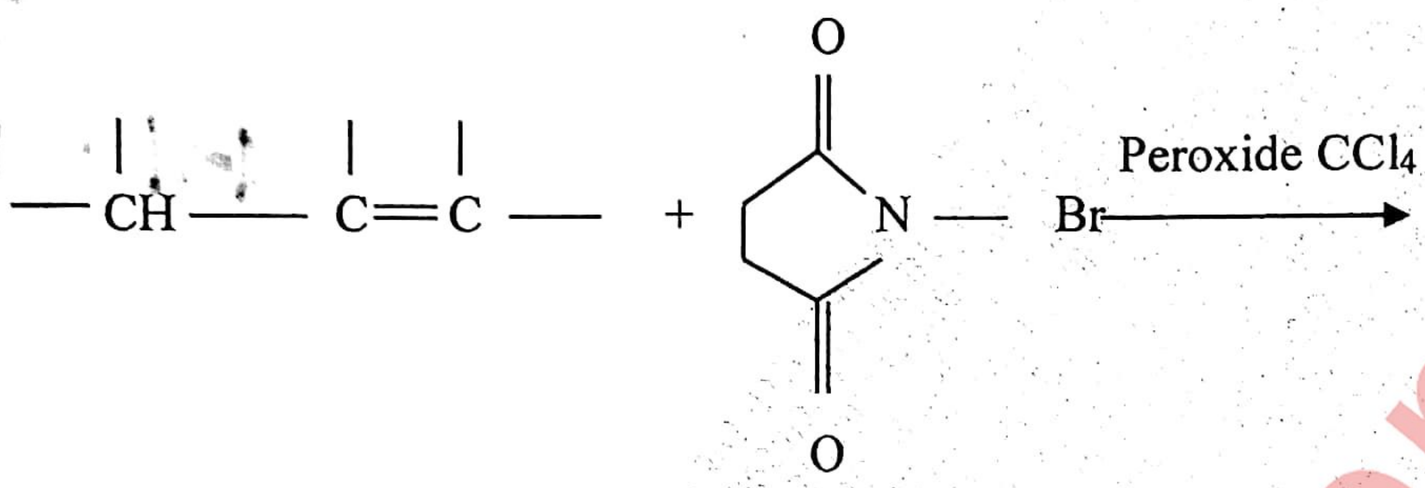
c) Complete the following reaction. State the name of the reaction and show the mechanism of the same **5**



d) Explain biochemistry of enzyme containing Zn. **5**

Q.3

a) Draw molecular orbital diagram for HF molecule and comment on it's bond order and magnetic properties. **5**

b) What is EAN? Calculate EAN of $[Ni(CO)_4]$ **5**

c) Explain the structure of singlet carbene. Discuss the stability of carbenes. **5**

d) Differentiate between photochemical and thermochemical reactions. **5**

Q.4

a) Discuss the formation of carbanion. **5**

b) What are the shortcomings of VBT. **5**

c) What is CFSE? Calculate CFSE for high and low spin octahedral complexes. **5**

d) State: **3**
1. Grothus Draper law.
2. Stark Einstein law.

II) Define **2**
1. Fluorescence
2. Phosphorescence

Q.5

a) Discuss mechanism of Pinacol Pinacolone rearrangement w.r.t. symmetrical diol. **5**

b) Explain oxygen atom transfer biomolecular reaction containing iron. **5**

c) What is hydrogen bonding? Explain with example intermolecular and intramolecular hydrogen bonding. **5**

d) List the limitations of CFT. **5**

Q.6

a) On the basis of MOT ,explain energy level diagram of NO molecule. **5**

b) Explain the role of stability of carbocation in addition reaction of HBr to propylene . **5**

c) Write a note on ionization isomerism and linkage isomerism. **5**

d) When naphthalene is sulphonated at 80^0c , which product will predominate? Justify your answer. **5**

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