11-11-13-DTP-P-14-AK-14 601

Con. 7866-13. Chemical Sem III (CBSGS)

Engineering Chemistry I

GX-12052 (1)

(3 Hours) (33)

[Total Marks : 80

N.B. : (1) Question No. 1 is **compulsory**.
(2) Attempt any **three** questions out of remaining **five** questions.

1. Attempt any **four** of the following :-

(a) What is VBT ? Explain the draw backs of VBT. 20

(b) Write IUPAC names of the following co-ordination compound.

(i) $No^{M}[Mn(CO)_5]$ $Mo[Mn(Co)_5]$

(ii) $[Pt(NH_3)_4(en)]Cl_4$. $[Pt(NH_3)_2Cl_4]$

(c) Draw and explain the structure of $Fe(CO)_5$.

(d) What is reactive intermadiate ? Explain with at least two examples.

(e) Distinguish between S_N^1 S_N^2 Reactions.

(f) Write Piracol Piracolone reactor with mechanism.

Pinacol Pinacolone rxn with mechanism

2. (a) On the basis of MOT, Explain molecular orbital energy pattern of N_2. 5

(b) What is EAN ? Calculate EAN $[Cu(CN)_4]^{3-}$. 5

(c) Write the reaction and mechanism of Michael reaction. 5

(d) Distinguish between Transition state and intermediate. 5

(a) What is CFSE ? Calculate CFSE for d^4 and d^7 in octahechal complex. 5

(b) Explain the structure of PCl_5 on the basis of VSEPR Theory. 5

(c) Explain Electrophilic substitution reaction w.r.t. Freiedal Craft alkyation. 5

(d) Explain preparation and proprietor of $Fe_2(CO)_9$. 5

properties of Fe_2

(a) Differentiate between bonding and antibonding molecular orbital. 5

(b) Write note on Werner's Theory. 5

(c) Explain the role of Fe in Haemoglobin. 5

(d) What is Thermodynamically and kinetically controlled reaction ? Explain with sulphonation of napthalene. 5

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5. (a) Write note on Hydrogen bonding. 5

(b) Explain bio-chemistry of enzyme containing copper. 5

(c) Write short note on elimination reaction. 5

(d) What is carbene ? Write one mechanism involving carbene. 5

6. (a) On the basis of MOT explain level diagram of NO+. 5

(b) Write the chemical formula for following co-ordination compound. 5

(i) Dichlorobis (en) cobalt (JV) sulphate.

(ii) Sodium hexanitro cobaltate (JJJ).

(c) Discuss inductive and Resonance with suitable example to explain stability of Carbanion. 5

(d) Explain Electrophilic substitution in case of chloroberzene. 5