

M.Sc. CHEMISTRY
FOURTH SEMESTER
INORGANIC CHEMISTRY-V
(INORGANIC POLYMERS & ORGANOMETALLICS)
MSC-403 B

(Use separate answer scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

(PART-A : Objective)

Time : 20 min.

Marks : 20

Choose the correct answer from the following:

1x20=20

- Grubbs metathesis catalysts have-
 - Poor tolerance to functional groups
 - Tolerance to functional group
 - No effect of functional groups
 - None of the above
- Oxidative addition can occur when a complex behaves as-
 - Lewis acid
 - Lewis base
 - Both as Lewis acid and base
 - Bronstead acid
- The number of ^1H NMR signal at -80°C , for $\eta^1\text{-Cp}$ in $(\eta^1\text{-Cp})(\eta^5\text{-Cp})\text{Fe}(\text{CO})_2$ is-
 - one
 - two
 - three
 - four
- The CO stretching frequency of $\text{Ni}(\text{CO})_4$, $\text{Co}(\text{CO})_4^-$ and $\text{Fe}(\text{CO})_4^{2-}$ respectively are-
 - 2060, 1890 and 1790 cm^{-1}
 - 2060, 1790 and 1890 cm^{-1}
 - 1790, 1890 and 2060 cm^{-1}
 - 1790, 2060 and 1890 cm^{-1}
- The CH fragment is Isolobal with the-
 - Fragment- $\text{d}^9\text{-ML}_3$
 - Fragment- $\text{d}^8\text{-ML}_3$
 - Fragment- $\text{d}^{10}\text{-ML}_3$
 - Fragment- $\text{d}^7\text{-ML}_3$
- The structure of the compound $[(\text{Cl})_3\text{W}(\mu\text{-Cl})_3\text{W}(\text{Cl})_3]$ is-
 - Face sharing bio-octahedral
 - Edge sharing bio-octahedral
 - Corner sharing bio-octahedral
 - None of the above
- The number of unpaired electron in $\text{U}(\text{C}_8\text{H}_8)_2$ is-
 - one
 - two
 - three
 - four
- In the hydroformylation reaction, the intermediate $\text{CH}_3\text{CH}_2\text{CH}_2\text{Co}(\text{CO})_3^-$
 - Forms an acyl intermediate $\text{CH}_3\text{CH}_2\text{CH}_2\text{COCO}(\text{CO})_3$.
 - Forms an adduct with olefin reactant.
 - Forms an adduct with H_2 .
 - Eliminate Propane.
- Match the following items of **Row I** with the appropriate item in **Row II**.
Row I: Wilkinson's catalysts(P), Whacker Catalysts(Q), Monsanto Catalyst (R), Hydroformylation catalysts (S):
Row II: $\text{Co}_2(\text{CO})_8$ (i), $[\text{Rh}(\text{CO})_2\text{I}_2]^-$ (ii), $\text{PdCl}_2/\text{CuCl}_2$ (iii), $\text{RhCl}(\text{PPh}_3)_3$ (iv)
 - P=i, Q=ii, R=iii, S= iv
 - P= iv, Q=iii, R= ii, S=i
 - P=iv, Q=iii, R= i, S=ii
 - P=iii, Q=vi, R=ii, S= i

