18CYB101J-CHEMISTRY (CT-3)

* Required

PART - B

Answer all the questions (17 X 2 = 34 Marks)

Which type of chemical reaction is observed at cathode, in electrochemical corrosion? *

- (●) Reduction reaction
- ( ) Peretectic reaction
- ( ) Oxidation reaction
- ( ) Radical reaction

Which of the following metal ions for sulphides? *

- ( ) Ca2+ and Al3+
- (●) Ag+ and Hg2+
- ( ) Ca2+ and Ag+
- ( ) Al3+ and Hg2+

A process is carried out at constant volume and at constant entropy. It will be spontaneous if: *

- ○ ΔH < 0
- ○ ΔU < 0
- ○ ΔA < 0
- ◉ ΔG < 0

For a potentiometric titration, in the curve of emf (E) vs volume (V) of the titrant added, the equivalence point is indicated by *

- ○ |dE/dV| = 0, |d2E/dV2|= 0
- ◉ |dE/dV| > 0, |d2E/dV2|= 0
- ○ |dE/dV| = 0, |d2E/dV2|> 0
- ○ |dE/dV| > 0, |d2E/dV2|> 0

Which of the following is an alkane which can exhibit optical activity? *

- ○ Neopentane
- ○ Isopentane
- ○ 3−Methylpentane
- ◉ 3−Methylhexane

The number of racemic forms of molecules having (n) different chiral carbons is-------- *

- ○ Option 1
- ○ 2n
- ◉ 2n-1
- ○ 2n+1

The conformations n-butane commonly known as gauche, eclipsed and anti-conformations can be inter-converted by rotation around *

- ○ C-H bond of methyl group
- ○ C1-C2 linkage
- ◉ C2-C3 linkage
- ○ C-H bond of methyene group

The energy required to rotate n-butane molecule about the carbon-carbon bond is called *

- ○ Rotational energy
- ◉ Torsional energy
- ○ Enantiomeric energy
- ○ Potential energy

In which of the following complex, the oxidation number of Fe is +1? *

- ○ Fe4[Fe(CN)6]3
- ◉ [Fe(H2O)5NO]SO4
- ○ [FeBr4]−
- ○ [Fe(H2O)6]2-

Which of the following substances can act as both oxidising and reducing agent? *

- ○ KMnO4
- ○ K2Cr2O7
- ○ HNO3
- ◉ H2O2

The rate of nucleophilic substitution reactions are higher in the presence of *

- ◉ Electron withdrawing groups
- ○ Electron releasing groups
- ○ Both electron withdrawing and releasing groups
- ○ Initiators

Arrange the following in the decreasing order of leaving group in nucleophilic substitution reaction. *

- H− > Cl− > HO− > Br− > CH3COO−
- Cl− > Br− > HO− > H− > CH3COO−
- Cl− > Br− > CH3COO − > HO− > H−
- HO− > CH3COO − > H− > Br− > Cl−

Which of the following pairs represents linkage isomers? *

- [Pd(PPh3)2 (NCS)2] and [Pd(PPh3)2(SCN)2]
- [Co (NH3)5 NO3]SO4 and [Co(NH3)5SO4] NO3
- [Pt Cl2(NH3)4]Br2 and [PtBr2(NH3)4]Cl2
- [Cu(NH3)4] [PtCl4] and [Pt(NH3)4] [CuCl4]

How many optically active stereoisomers are possible for butane-2,3-diol? *

- 1
- 2
- 3
- 4

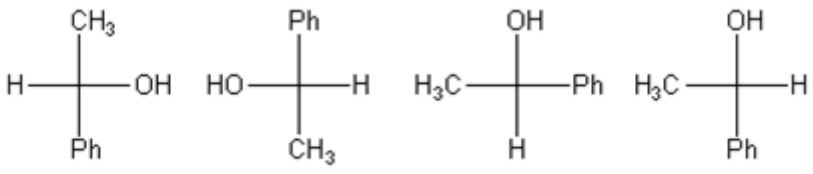
The cell potential for a Zn/Cu cell when [Zn2+] = 10 M and [Cu2+] = 1 M at 25 °C, where for Cu2+(aq) + 2e- → Cu(s), Eo = + 0.34 V and Zn(s) → Zn2+(aq) + 2e- Eo = + 0.76 V. *

- ○ 1.07 V
- ○ 2.14 V
- ◉ 1.10 V
- ○ 2.20 V

Which molecule has zero standard molar enthalpy of formation at 298 K *

- ◉ Cl2(g)
- ○ H2O
- ○ Br2 (g)
- ○ CH4 (g)

Which of the following Fischer projections is different from the other three? *



1 2 3 4

- ○ 1
- ○ 2
- ○ 3

4

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