

SARVANSIR CHEMISTRY TUTOR

Worksheet | Chemistry | Topic – Revision Test

Time: 1.5-hour, Total Marks 30

Q.1. Write the coordination number and oxidation state of Platinum in the complex $[\text{Pt}(\text{en})_2\text{Cl}_2]$. (1 Mark)

Q.2. $2\text{N}_2\text{O}_5(\text{g}) \rightarrow 4\text{NO}_2(\text{g}) + \text{O}_2(\text{g})$

the rate of formation of $\text{NO}_2(\text{g})$ is $2.8 \times 10^{-3} \text{ Ms}^{-1}$. Calculate the rate of disappearance of $\text{N}_2\text{O}_5(\text{g})$. (2 Marks)

Q.3. Complete and balance the following chemical equations:

(a) $\text{Fe}^{2+} + \text{MnO}_4^- + \text{H}^+ \rightarrow$

(b) $\text{MnO}_4^- + \text{H}_2\text{O} + \text{I}^- \rightarrow$ (2 Marks)

Q.4. A first-order reaction is 50% completed in 40 minutes at 300 K and in 20 minutes at 320 K. Calculate the activation energy of the reaction. (Given: $\log 2 = 0.3010$, $\log 4 = 0.6021$, $R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$) (3 Marks)

Q.5. Write mechanism of ethanol to ethene (2 Marks)

Q.6. Write mechanism of reaction between propanoic acid and HI (2 Marks)

Q.7. Give reasons:

(a) E^0 value for $\text{Mn}^{3+}/\text{Mn}^{2+}$ couple is much more positive than that for $\text{Fe}^{3+}/\text{Fe}^{2+}$.

(b) Iron has a higher enthalpy of atomization than that of copper.

(c) Sc^{3+} is colourless in aqueous solution whereas Ti^{3+} is coloured. (3 Marks)

Q.8. (a) Write the reactions involved in the following: [5]

(i) Hofmann bromamide degradation reaction

(ii) Diazotisation

(iii) Gabriel phthalimide synthesis (3 Marks)

Q.9. Define the following with an example of each:

(a) Polysaccharides

(b) Denatured protein

(c) Essential amino acids (3 Marks)

Q.10 (a). Write the formula of the following coordination compound: Iron (III) hexacyanoferrate (II)

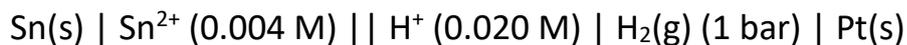
(b) What type of isomerism is exhibited by the complex $[\text{Co}(\text{NH}_3)_5 \text{Cl}]\text{SO}_4$?

(c) Write the hybridisation and number of unpaired electrons in the complex $[\text{CoF}_6]^{3-}$.

(Atomic number of Co = 27) (3 Marks)

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Q.11. Write the cell reaction and calculate the e.m.f. of the following cell at 298 K: [5]



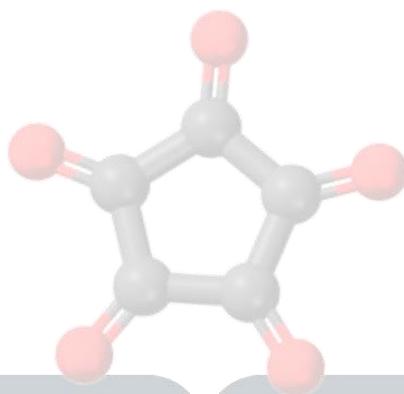
(Given: $E^\circ \text{Sn}^{2+}/\text{Sn} = -0.14\text{V}$) (3-Marks)

Q.12. (a) What type of isomerism is shown by the complex $[\text{Co}(\text{NH}_3)_5(\text{SCN})]^{2+}$?

(b) Why is $[\text{NiCl}_4]^{2-}$ paramagnetic while $[\text{Ni}(\text{CN})_4]^{2-}$ is diamagnetic?

(Atomic number of Ni = 28)

(c) Why are low spin tetrahedral complexes rarely observed? (3-Marks)



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