(1) CHEMISTRY - XII (2017-18)

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प्र. क्र. Q. No.		
	(1)	Complete the following reactions:
		(a) $(NH_4)_2 Cr_2O_7 \xrightarrow{\Delta}$
		(b) $I^- + O_3 + H_2O \longrightarrow$
	(2)	Give the chemical test to distinguish between the following compounds.
		(a) Aniline and ethylamine
		(b) Ethanamine and ethanol.
	(3)	Give reasons:
		(a) Interhalogen compounds are more reactive than halogens.
		(b) PCl_5 is known but NCl_5 is not known.
		(c) Amongst all noble gases only xenon is known to form compounds with oxygen and fluorine
	(4)	Analysis shows that a metal oxide has the empirical formula $M_{0.96}O_{1.0}$. Calculate the percentage of M^{2+} and M^{3+} ions in this crystal.
	(5)	Give the monomers of nylon 2 and nylon 6 polymer
	(6)	An optically active compound having $C_7H_{15}Br$ reacts with aqueous KOH to give a racemic mixture of products. Write the mechanism involved for this reaction.

Q.No. | Q.No.

प्र. क्र. Q. No.

(7) The following chemical reaction is occuring in an electrochemical cell.

$Mg + 2Ag^{+}[.0001M] \rightarrow Mg^{+2}[.10m] + 2Ag$

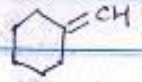
The E° are $Mg^{+2}/Mg = -2.36\,V$.

$Ag^{+}/Ag = .81\,V$ Calculate =>

(a) E° for Ag^{+}/Ag

(b) Cell potential and symbolic representation

(8) Identify A to E in the reaction.



$\xrightarrow[Zn/H_2O]{O_3}$ A + B

$A + B \xrightarrow{dil\,NaOH} C + H_2O$

$C \xrightarrow[Zn/H_2O]{O_3} A + D$

$D \xrightarrow[\Delta]{H_2/Ni} E$

(9) Using VBT predict the geometry and magnetic behaviour of $[Cr(NH_3)_6]^{3+}$ ion

(10) Define anomers, vulcanisation and colloid

(11) What is slag? Describe different methods which can be used for

Q.No. | Q.No.

प्र. क्र. Q. No.

the concentration of the ore.

12 (a) Write the preparation of $C_6H_{12}O_6$

(b) Write the structural and functional differences between RNA and DNA.

13 (a) Compare physical and chemical adsorption in terms of rate of prevailing temperature

(b) Show graphically how the amount of a gas adsorbed on a solid in physical adsorption varies with pressure and temperature.

14 Convert

(a) Benzoic acid to benzaldehyde

(b) Benzene to m-nitro acetophenone.

(c) Benzene to benzoic acid

15 (a) What happens when aniline reacts with a mixture of H_2SO_4 & HNO_3 ?

(b) Why Gabriel phthalamide synthesis is preferred for synthesising primary amines ?

16 Describe the principle of →

(a) Mond's process

(b) Van Arkel Method

17 A first order reaction is 20% complete in 10 min. Calculate the time taken by the reaction for 75% completion.

Q.No. | Q.No.

18 What does a step increase in the slope of a line on Ellingham diagram indicate?

19 The unit cell of an element of atomic mass 96 and density $10.3\ g\ cm^{-3}$ is a cube with edge length of 314 pm. Find the structure of crystal lattice.

20 (a) Define molar conductivity of solution. What is the effect of increase of concentration on the molar conductivity of a solution.

(b) 3 electrolytic cells A, B, C containing solution of $ZnSO_4$, $AgNO_3$ and $CuSO_4$, respectively are connected in series. A steady current of 1.5 amps was passed through them until 1.45 g of silver deposited at the cathode of cell B.

(i) How long did the current flow?

(ii) What mass of Cu and

Q.No. | Q.No.

Zn were deposited on the cathodes of cell A and C respectively.

(21) Mention one important use of each of the following.
(a) Equanil (b) Sucrose.

(22) Write the structures of A, B and C

(a) $C_6H_5CONH_2 \xrightarrow[KOH]{Br_2/} A \xrightarrow[+HCl]{NaNO_2} B \xrightarrow{KI} C$

(b) $CH_3-Cl \xrightarrow{KCN} A \xrightarrow{Ni\ AlH_4} B \xrightarrow[alc\ KOK]{CHCl_3 +} C$

(23) Using IUPAC norms write the formulas for the following.
(a) Sodium dicyanidoaurate (I)
(b) Tetraamminechloridonitrato-N-platinum(IV) sulphate

(24) Write the structure of the monomers
(a) PVC (b) BUNA-N (c) Melamine
(d) Buna-S

(25) Complete the equations.
(a) $MnO_4^- + H^+ + S_2^- \rightarrow$
(b) $KMnO_4 \xrightarrow{\Delta}$