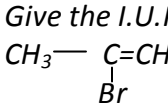
Class XII
Chemistry

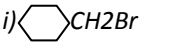
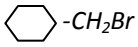
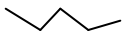
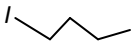
Time: 3hrs *MM: 70*

General instructions:

All questions are compulsory.
Marks for each question are indicated against it.
Questions number 1to 8 are very short –answer questions, carrying 1 mark each. Answer these in one word or about one sentence each.
Questions number 9 to18 are short –answer questions, carrying 2 marks each. Answer these in about 30 words each.
Questions number19 to27 are short –answer questions, carrying 3 marks each. Answer these in about 40 words each.
Questions number28 to30 are long-answer questions of 5 marks each. Answer these in about 70 words each.

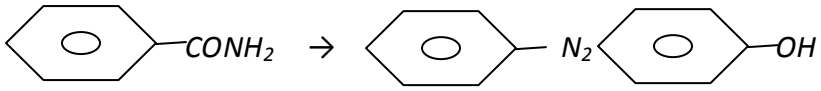
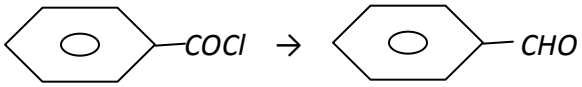
7 Use log tables, if necessary. Use of calculators is not permitted

Q1	*ZnO on heating impart yellow color give reason.*	*1*
Q2	*Define the term `zetapotential' .*	*1*
Q3	Define hydrometallurgy	*1*
Q4	*Draw the structure of solid PCl_5.*	*1*
Q5	*Give the I.U.P.A.C.name of the following compound.* 	*1*
Q6	*Write the structural formula of 3-hydroxy -3-methyl-2-oxo hexanal.*	*1*
Q7	*Arrange the following compounds in increasing order of basic strength in their aqueous solutions.* $NH_3, C_2H_5NH_2, (C_2H_5)_2NH, (C_2H_5)_3N$	*1*
Q8	*Write the monomers used for getting the following polymer .* *i)Buna-S ii)Nylon 2-6*	*1*
Q9	*A reaction is second order with respect to A and 1/2 in B.How is the rate of reaction be affected if. the concentration of this reaction is* *i) concentration of A is Doubled* *ii) concentration of **B is** Reduced to half*	*2*

Q10	Explain the role of (i)I_2 in the refining of Zr . (ii)depressant in the froth floatation method.	2
Q11	i)Draw the structure of BrF_3 molecule. ii)SF_4 is easily hydrolysed whereas SF_6 is not easily hydrolysed	2
Q12	i)What happens when P_4 is treated with Thionyl chloride. ii)How is O_3 estimated quantitatively?	2
Q13	i)Discuss about deviation shows by mixing Acetone $CHCl_3$. ii)Define the term cryoscopic constant.	2
Q14	Which one in the following pairs of substances undergoes S_N2 substitution reaction faster and why? i)  and  ii)  and 	2
Q15	Complete the following reactions: i) $CH_3CH=C(CH_3)_2 + HBr \xrightarrow{peroxide}$? ii)$CH_3CH_2CH_2Cl + NaI \xrightarrow{acetone\ and\ heat}$	2
Q16	Explain the following : a)Isoelectric point. b) Two strands of DNA are not identical but complimentary to each other. Explain this statement.	2
Q17	What do you mean by essential and non essential amino acid give one example of each?	2
Q18	What is a biodegradable polymer?Write the monomer of Nylon 6 and Bakelite.	2
Q19	If the radius of Copper atom is 127.8 pm and density of copper metal is 8.95 g/cm^3 is the copper unit cell a face centred cubic ,a body centred or simple cubic structure.(Given :At.mass of Cu=63.5,N_A=6.022x10^{23})	3
Q20	Determine the amount of K_2SO_4 dissolved in 3.5 liter of water such that its osmotic pressure is 0.80 atm at 27°C,assuming that it is completely dissociated.(Given:At.mass of K=39 u,S=32 u,O=16)	3
Q21		3

	The reaction between A and B is first order with respect to A and zero order with respect to B. Fill in the blanks in the following table. *Exp.* | *[A] / mol L^{-1}* | *[B] / mol L^{-1}* | *Initial Rate Mol L^{-1} min^{-1}* *01* | *0.1* | *0.1* | *2.0×10^{-2}* *02* | *-* | *02* | *4.0×10^{-2}* *03* | *0.4* | *0.4* | *-* *04* | *-* | *0.2* | *2.0×10^{-2}*	
Q22	*i)Why heat of chemisorption is always more than that of physisorption ?* *ii)Define selectivity of catalyst.* *iii)Define an emulsion with one example.*	*3*
Q23	*i)Bleaching action of Cl_2 is permanent but not in case of SO_2.* *ii) $R_3P=O$ is known while $R_3N=O$ is not known.* *iii)What happens chlorine is react with hot and conc. NaOH.* *Or* *i)What happen when XeF_4 react with water.* *ii) Noble gas species which is isostructural with ClO^{-1}* *iii)Complete the following reaction* *P_4 + NaOH* $\longrightarrow$	*3*
Q24	*For the complex $[Co(NH_3)_4 Cl_2]Br$ identify* *i)the oxidation number of iron,* *ii)the hybridization and shape of complex,* *iii)the number of ionization isomers,* *iv)name of complex,* *v)the magnetic moment of iron.* *Vi)C.F.S.E. value for above complex .* *or* *Show the octahedral splitting of octahedral complex.How the pairing energy related with Δ_0 .*	*3*

Q25	i)Explain the mechanism of acid catalysed hydration of ethenel forming ethanol. ii)Convert methanal to propanol by using Grignard's reagent. iii)Write the reaction between phenol and Br_2 (aq).	3
Q26	Giving an example for each describe the following reaction. i)clemensen reduction ii)Etard oxidation iii)Cross Aldol condensation	3
Q27	i)Write the difference between antiseptic and disinfectants with one example in each. ii)What is non ionic detergent.	3
Q28	i) Transition metal compounds generally act as catalyst .(give reason) ii) Discuss the lanthanoid contraction . iii) E^0Mn^{3+}/Mn^{2+} has higer positive value than E^0 Cr^{3+}/Cr^{2+}(Atomic number Cr=24,Mn= iv)How $KMnO_4$ can be prepared from pyrolusite ore? V)Why do the transition elements form coloured compounds?Explain. vi)Write the reaction between $KMnO_4$ and $FeSO_4$in acidic medium. Or Account for the following : (i) Out of the ions Co^{2+}, Sc^{3+} and Cr^{3+} which one would give coloured aqueous solutions and why ? (ii) Explain why chromium is a typical hard metal while mercury is a liquid. (iii) Why in permanganate ion, there is a covalency between manganese and oxygen ? (iV)Why do the transition elements form interstitial compound? (v) Complete the given reaction :	5

	$Cr_2O_7^{2-} + H^+ + H_2C_2O_4 \rightarrow$	
Q29	*i)Write the anode and cathode reaction of lead storage battery.* *ii)Define the molar conductivity .* *iii)Calculate the equilibrium constant for the reaction* *$2Cr(s) + 3Cd^{+2} \rightarrow 2Cr^{+3}(s) + 3Cd$* *[$E^0Cr^{3+}/Cr = -0.74$ V and $E^0Cd^{2+}/Cd = +0.40$V]* *Or* *(i) State Kohlrausch's law.* *(b) Write down the reactions involved in the charging of a lead storage battery.* *(c) A solution of $Ni(NO_3)_2$ is electrolysed between platinum electrodes using a current 1.5.0 amperes for 15 minutes. What mass of Ni is deposited at the cathode.* *[At. Wt. Ni = 58.7]*	5
Q30	*Complete the following reaction.* *i)*  *ii)*  *iii)Distinguish between the following by suitable chemical test* *a)Phenol and aspirin.* *b)Benzaldehyde and aniline* ***Or*** i)An organic compound with the molecular formula $C_{10}H_{13}O$ forms 2,4-DNP derivative, reduces Tollen's reagent and undergoes Cannizzaro reaction .On vigorous oxidation it gives benzene-1,2,3-tricarboxylic acid.Identify the organic compound.	5

	ii)Arrange the following acid in increasing order of acidity: $CH_3CH_2CH(Br)COOH, CH_3CHBrCH_2COOH, (CH_3)_2CHCOOH, CH_3CH_2CH_2COOH$ III)Convert bezaldehyde cinnamic acid.	

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