Sample Paper – 2014
Class – XII
Subject – Chemistry

	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* Time:3hrs MM:70	
Q1.	Write the IUPAC names of the following compound: $CH_3COCH=CHCH_2COCH_2CHO$	1
Q2	Write the product obtained when $CH_3CH_2CH(CH_3)$ -O-CH_2CH_3 is heated with HI.	1
Q3.	When $FeCl_3$ sloution is added in Reddish brown precipitate of $Fe(OH)_3$,precipitate get dissolve give reason.	1
Q4.	How Cu can extracted from low grade copper ore?	1
Q5	Haloalkanes react with $AgNO_2$ to form alkyl nitro alkane as main product while KNO_2 forms alkyl nitrite as the chief product. Explain.	1

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Q6.	Predict the order of reactivity of the following compounds in S_N1 and S_N2 reactions: i)$C_6H_5CH_2Br$, $C_6H_5CH(C_6H_5)Br$, $C_6H_5CH(CH_3)Br$, $C_6H_5C(CH_3)(C_6H_5)Br$	1
Q7.	Why NF_3 is more exothermic than NCl_3 .	1
Q8.	Write the structure of product obtained when glucose react with Br_2 water.	1
Q9.	An element has a body-centred cubic *(bcc)* structure with a cell edge of 288 pm. The density of the element is 7.2 g/cm^3. Calculate atomic mass .How many atoms are present in 208 g of the element?	2
Q10.	i)Write the difference between interstitial defect and dislocation defect. ii) Write the difference between metallic solid and ionic solid.	2
Q11.	i)Why Non ideal solution shows either +ve or –ve deviation from Raoult's? ii)What type of deviation occur in following mixture: i) acetone mix with ethanol ii)acetone mix with chloroform	2
Q12.	i)Why does the conductivity of a solution decrease where as molar conductivity increases with dilution? ii)Write charging reaction on cathode in lead storage battery.	2
Q13.	i)Draw the structure of:BrF_3,$XeOF_4$. ii)Write the composition of solid PCl_5.	2
Q14.	Convert following: i)Aniline to chlorobenzene ii)2-Chloropropane to 1-fluoro propane.	2
Q15.	i)Convert phenol to benzoquinone. ii)Phenol to aspirin. iii) While separating a mixture of *ortho* and *para* nitrophenols by steam distillation, name the isomer which will be steam volatile. Give reason..	2
Q16.	i)Although amino group is *o*– and *p*– directing in aromatic electrophilic substitution reactions.Why aniline on nitration gives a substantial amount of *m*-nitroaniline. ii)Why cannot aromatic primary amines be prepared by Gabriel phthalimide synthesis?	2
Q17.	i)Describe a method for the identification of primary, secondary and tertiary amines.Also write chemical equations of the reactions involved. ii) Write a short note on Hofmann's bromamide reaction.	2
Q18.	i)Arrange the following in increasing order of reducing power, boiling point, basic nature. PH_3,BiH_3,SbH_3,NH_3 ii)Write the product of hydrolysis of XeF_4.	2

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Q19.	i)What is the role of collector, froth stabilizer and depressants in froth floatation method. ii)What is the role of graphite rod in *Hall-Heroult* process?	2
Q20.	0.6 mL of acetic acid (CH_3COOH), having density 1.06 g mL^{-1}, is dissolved in 1 litre of water. The depression in freezing point observed for this strength of acid was 0.0205°C. Calculate the van't Hoff factor and the dissociation constant of acid. Or 19.5 g of CH_2FCOOH is dissolved in 500 g of water. The depression in the freezing point of water observed is 1.0^0C. Calculate the van't Hoff factor and dissociation constant of fluoroacetic acid.	3
Q21.	Write the Nernst equation and calculate emf ,Kc of the following cells at 298 K: (i) $Fe^{+2}(0.01M)\mid Fe^{+3}(0.001M)\|\|Cu^{+2}(0.001)/Cu^{1+}(0.0001\ M)$ (ii) Given $E^0\ Cu^{2+}/Cu^{+1}$ =0.36V and $E^0\ Fe^{3+}/Fe^{+2}$ =0.77V.	3
Q22.	*i)In Freundlich adsorption isotherm what is the provable range of 1/n?* *ii)What is the cause of formation of delta?* *iii)Define tyndal effect.*	3
Q23.	i)Salt 'AB' when treated with slacked lime give colourless pungent smelling gas 'C'. Gas 'C' gives deep blue colour compound[D]with Copper(II)sulphate. Identify 'C' and 'D'. ii)What happens when sulphur dioxide is passed through an aqueous solution of Fe(III) salt? iii)Although electron gain enthalpy of fluorine is less negative as compared to chlorine, fluorine is a stronger oxidising agent than chlorine. Why?	3
Q24.	Wxplain the meaning of following term with example: i)Peptide bond ii) α-d-glucopyranose iii)nucleotide	3
Q25.	a)Explain the following term :i)Condensation polymer ii)vulcanisation of rubber b)Write the structure of monomer of nylon-6,6.	3
Q26.	Wxplain the meaning of following term with example: i)broad spectrum antibiotics ii)tincture of iodine iii)food preservatives	3
Q27.	i)Draw the structure,state of hybridization,stereoisomers of Dichloridobis(ethane-1,2-diamine)cobalt(III). ii)Write IUPAC name state of hybridization,stereoisomers of $[Co(NH_3)_3(NO_2)_3]$. iii) Discuss Werner's postulates.	3
Q28.	i)Write the order of reaction . ii)Unit of K. iii)What change occur in half life time If initial concentration of reactant increases 4 time.	5

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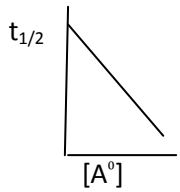


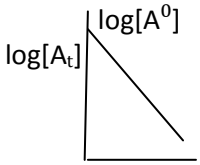
iv) The first order rate constant for the decomposition of ethyl iodide by the reaction

$$C_2H_5I(g) \rightarrow C_2H_4(g) + HI(g)$$

at 600K is 1.60×10^{-5} s^{-1}. Its energy of activation is 209 kJ/mol.Calculate the rate constant of the reaction at 700K.

Or

For a reaction:



i)Write differential rate equation .
ii)Unit of K.
iii)What change occur in half life time If initial concentration of reactant increases 4 time.
iv) The following data were obtained during the first order thermal decomposition of N_2O_5 (g) at constant volume:

$$2N_2O_{5\,(g)} \rightarrow 2N_2O_{4\,(g)} + O_{2(g)}$$

Experiment	Time/s	Total Pressure/atm
1	0	0.6
2	100	0.65

Calculate the rate of reaction when total pressure is 0.7atm.

Q29. i)How $K_2Cr_2O_7$ is prepared from Iron chromite. 5
ii) Cobalt(II) is stable in aqueous solution but in the presence of complexing reagents it is easily oxidised.
iii)The lowest oxide of transition metal is basic, the highest is amphoteric/acidic.
iv)The transition metals generally form coloured compounds and interstitial compound.
v) Why is the E^0 value for the Mn^{3+}/Mn^{2+} couple much more positive than that for Cr^{3+}/Cr^{2+} or Fe^{3+}/Fe^{2+}? Explain.

Or

i)Which is a stronger reducing agent Cr^{2+} or Fe^{2+} and why ?

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	ii)How would you account for the increasing oxidising power in the series $VO^{2+} < Cr_2O_7^{2-} < MnO_4^-$? iii) Prepare $KMnO_4$ from pyrolusite ore. iv)Explain why Cu^+ ion is not stable in aqueous solutions? v) Explain why actenoid shows greater range of oxidation state than lanthanoids.	
Q30.	i)Give simple chemical tests to distinguish between the Acetophenone and Benzophenone. ii)There are two $-NH_2$ groups in semicarbazide. However, only one is involved in the formation of semicarbazones.(give possible explanation) iii) An organic compound 'A'with the molecular formula $C_9H_{10}O$ forms 2,4-DNP derivative'B',reduces Tollens' reagent and undergoes Cannizzaro reaction to give 'C'and 'D'. On vigorous oxidation,'A' gives 1,2-benzenedicarboxylic acid. Identify the compounds.A,B,C and D. Or Describe the following: i)Cannizzaro reaction ii)H.V.Z. reaction iii) Arrange the following compounds in increasing order of their acidic nature CF_3COOH , NO_2CH_2COOH , $NC\text{-}CH_2COOH$ CCl_3COOH ,$CHCl_2COOH$, iv)Convert Benzyl alcohol to phenylethanoic acid. v)Arrange the following compounds in increasing order of their reactivity in nucleophilic addition reactions. (i) Benzophenone Ethanal, Propanone, Propanal, Butanone.	5

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