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SAMPLE QUESTION PAPER
TERM-2
SUBJECT- CHEMISTRY
SET-2

MM-35   CLASS- XI   TIME – 2 HOURS

GENERAL INSTRUCTIONS:

Read the following instructions carefully.

1. There are 12 questions in this question paper with internal choice.
2. SECTION A - Q. No. 1 to 3 are very short answer questions carrying 2 marks each.
3. SECTION B - Q. No. 4 to 11 are short answer questions carrying 3 marks each.
4. SECTION C- Q. No. 12 is case study based question carrying 5 marks.
5. All questions are compulsory.
6. Use of log table and calculator is completely prohibited.

SECTION- A

Q1		Write the name of intermolecular forces acting in followings:	
	(i)	Helium atom in liquid helium.	½
	(ii)	HCl molecules in liquidity HCl.	½
	(iii)	Water molecules in liquid water.	½
	(iv)	Helium items in HCl molecules.	½
Q2		Calculate the density of ammonia (NH_3), at 30°C and 5 bar pressure. (Atomic mass of N-14, H-1)	2
Q3	(i)	Arrange the following in increasing order of their hydration enthalpy. Li^+, Na^+, K^+, Rb^+	1
	(ii)	Complete the following reaction equation $Na_{(s)} + H_2O_{(l)}$	1

SECTION –B

Q4		Under what condition will a reaction be spontaneous in followings indicating the role of temperature. (assume that temperature is positive)	
	(i)	Both ΔH and ΔS are positive	1
	(ii)	Both ΔH and ΔS are negative.	1

	(iii)	ΔH is negative and ΔS is positive.	1
Q5		Define the term with suitable example.	
	(i)	Enthalpy of hydration	1
	(ii)	Internal energy	1
	(iii)	Entropy	1
		OR	
	(i)	Define Hess's Law of constant heat of summation with suitable example.	1
	(ii)	What is the sign of ΔH for	
		(a) Evaporation of liquid water into steam.	1
		(b) Freezing of liquid water into ice.	1
Q6.	(i)	Give any two points which favour the diagonal relationship of lithium with magnesium.	1
	(ii)	First ionization enthalpy of alkaline earth metals is greater than that of first ionization enthalpy of alkali metals why?	1
	(iii)	Alkali metals placed in first group of periodic table while alkaline earth metals placed in second group, give reason.	1
		OR	
		Give reason for following	
	(i)	Solubility of alkaline earth metal hydroxide in water increases down the group.	1
	(ii)	Lithium is stronger reducing agent than sodium while first ionization enthalpy of lithium is greater than sodium.	1
	(iii)	Alkali metals are not found in Free State in nature.	1
Q7.		Give reason for following	
	(i)	BCl_3 is more stable than $TlCl_3$.	1
	(ii)	BF_3 behaves as Lewis acid.	1
	(iii)	Atomic radius of gallium is less than atomic radius of aluminum.	1
Q8.		An element A when heated with oxygen gas then form its monoxide B and dioxide C, monoxide B is a powerful reducing agent and reduces ferric oxide into iron. Identify element A and it's both oxide B and C. Out of gas B and C which is constituent of water gas and producer gas. Write all chemical reaction equation involve in above processes.	1+1+1
		OR	
	(i)	Arrange the following as shown in bracket	
	(ii)	CO_2 SiO_2 GeO_2 SnO2 PbO_2 (increasing order of acidic	1
	(iii)	strength)	1

		C-C, Si-Si, Ge-Ge, Sn-Sn (Increasing order of bond enthalpy) C, Si, Ge, Sn, Pb (Decreasing order of first ionization enthalpy)	1
Q9.	(i) (ii) (iii)	Write IUPAC name of $CH_3-CH=CH-CH_2CH_3$ Write the all possible geometrical isomers of C_4H_8. Out of n-pentane, 2-methyl butane and 2,2-dimethyl, propane which one has highest boiling point and which one has least boiling point.	1 1 ½, ½
Q10.	 (i) (ii) (iii) (i) (ii)	What happens when, (write only chemical equation) Ethyne passed through red hot iron tube. Ethene is allow reacting with ozone and hydrolysed in presence of zinc. Benzene reacts with conc-HNO_3 in presence of concentrate H_2SO_4. OR Write Fridel Craft alkylation reaction and its mechanism. Write Wurtz-fittig reaction	 1 1 1 1+1 1
Q11.	 (i) (ii) (iii)	How will you convert the following (write only chemical equation)? Ethyne to ethanal Propene to 1-propanol Benzene to acetophenone	 1 1 1

SECTION – C (Case based question)

Q.12		**Read the following passage and answer the questions that follow:** Equilibrium can be established for both physical and chemical processes and at equilibrium rate of forward reaction and rate of backward process are equal equilibrium constant K_C is expressed as the concentration of products divided by concentration of reactants each raised to stoichiometric coefficient K_C value Casey has fixed value of constant temperature and at this stage concentration pressure etc, become constant K_P is equilibrium constant in terms of partial pressure of gases or vapours. The direction of reaction can be predicted by reaction quotient Q_C and Qp, when Q_C is equal to K_C or Q_P is equal to K_P then equilibrium establish. Le-Chatelier's principle states equilibrium will shift in the direction so as to counter balance the effect of change in temperature, pressure and concentration. The equilibrium between ions and unionized molecule in weak electrolyte is called ionic equilibrium.	
	(i)	Now answer the following questions At a certain temperature $K_p = 9/4$ for the reaction	

		$CO_{(g)} + H_2O_{(g)} \rightleftharpoons CO_{2(g)} + H_{2(g)}$ if 10 moles of each of four gases taken in 1 litre container, what will be the concentration of H_2 gas at equilibrium.	2
	(ii)	In the reaction $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$ At equilibrium if the concentration of the reactants increased what effect will seen in the value of equilibrium constant Kc at given temperature.	1
	(iii)	If the value of an equilibrium constant for a particular reaction is 1.6×10^{12} what will be major component present in the system at equilibrium.	1
	(iv)	Equilibrium constant K_1 for reaction $3H_2(g) + N_2(g) \rightleftharpoons 2NH_3(g)$ is 49, what is equilibrium constant K_2 for $NH_{3(g)} \rightleftharpoons N_{2(g)} + 3/2\ H_2O_{(g)}$	1

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