GURU GOBIND SINGH PUBLIC SCHOOL
HALF YEARLY EXAM- REVISION ASSIGNMENT

CLASS-XII **CHEMISTRY** **LEVEL -2**

Solid State :

Q. No.- 1 : Tungsten crystallizes in body centred cubic unit cell. It the edge length of the unit cold is 316.5 Pm. What is the radius of tungsten?

Q. No.- 2 : Define the following :

a) Schottky defect b) Frenkel defect c) F-centres

Q. No.- 3 a) What type of non-stoichiometric defect is responsible for the Pink Colour of Licl?

b) What type of substance would make better magnets, ferromagnetic or forrimagnetic?

Q. No.- 4 : An element with density 11.2 gm Cm^{-3} forms a fcc lattice with edge length of 4×10^{-8} cm calculate the atomic mass of the element.
(Given NA = $6.022 \times 10^{23} mol^{-1}$)

Q. No.- 5 : Henry's Law constant for CO_2 dissolved in Water is 1.67×10^8 Pa 298K. Calculate the quantity of CO_2 in 1L of soda water when packed under 2.5 atm CO_2 pressure at 298 K.

Q. No.- 6 : Using Raoult's Law explain how the total vapour pressure over the solution is related to mole traction of components in the following solutions.

a) $CHCl_3(l)$ and CH_2Cl_2 b) NaCl(s) and H_2O (l)

Q. No.- 7 : A solution (by mass) of cane sugar in water has freezing point of 271K. Calculate the freezing point of a 5% glucose in water if the freezing point of pure water is 273.15K.

Q. No.- 8 : At 300K, 36gm glucose present per liter in its solution has osmotic pressure of 4-98 bar. If the osmotic pressure of solution is 1.52 bar at the same temperature. What would be its concentration?

ELECTRO CHEMISTRY

Q. No.- 9 : In the botton cell widerly used in watches and in other devices, the following relation takes place :

$$Zn(s) + Ag_2O(s) + H_2O(l) \longrightarrow Zu^{2+}_{(ag)} + 2Ag + 2OH^-(ag)$$

Determine E^0 and ΔG^0 for the reaction.

Q. No.- 10 : Calculate the standard cell potentials of the galvanic cell in which the following relations take place

$$2Cr(s) + 3Cd^{2+}_{(aq)} \longrightarrow 2Cr^{3+}_{(aq)} + 3Cd(s)$$

Given that $E^0Cr^{3+}/Cr = -0.74V$

$E^0Cd^{2+}/Cd = -0.40V$

Q. No.- 11 : What is secondary call? Write the relation of a lead storage battery when it is discharged. How does the density of the electrolyte. Changes when the battery is discharged?

Q. No.- 12 : Define molar conductivity of a solutions and explain how molar conductivity changes with change in concentration of a solution for weak and a strong electrolyte.

Q. No.- 13 : State Kohlarausch's law for independent migration of ions. Mention the application of the law.

Q. No.- 14 : Write Faraday's Law of electrolysis.

Chemical Kinetics

Q. No.- 15 : What is Pseudo unimolecular reaction? Explain with example.

Q. No.- 16 : Show that for a first order reaction the time required for 99% completion of a reaction is twice the time required to complete 90% of the reaction.

Q. No.- 17 : A reaction is first order in A and second order in B.

(i) Write the differential rate equation.

(ii) How is the rate affected when the concentration of B is tripled?

(iii) How is rate affected when the concentration of both A and B are doubled?

Q. No.- 18 : Give the difference between order and molecularity of a reaction.

Q. No.- 19 : What is the effect of temp on the rate constant of a reaction? How can this temp effect on the rate constant be represented quantitatively?

Q. No.- 20 : How is activation energy of a reaction affected

(i) By using a catalyst (ii) By increasing the temp

Surface Chemistry

Q. No.- 21 : Explain what is observed when "

(i) A beam of light is passed through colloidal sol.

(ii) an electrolyte NaCl is added to ferric hydroxide sol.

(iii) Electric current is passed through a colloidal sol?

Q. No.- 22 : What are emulsions? What are their different types? Give example of each type.

Q. No.- 23 : What do you mean by activity and selectivity of a catalysts?

Q. No.- 24 : Explain the following terms with suitable examples.

(i) Gel (ii) Aero sol (iii) Hydro sol

Q. No.- 25 : Explain

(i) Peptisation (ii) Electrophoresis (iii) Coagulation

(iv) Tyndall effect

Q. No.- 26 : a) What is Kraft temperature?

b) Differentiate between

(i) Multimolecular colloids

(ii) Micromolecular colloids

(iii) Lyophilic and Lyophobic colloids

Q. No. 27 : What is the significance of leaching in the extraction of Al ?

Q. No. 28 : Outline the Principles of refining of metals by following methods :

(a) Zone refining (b) Electrolytic refining

(c) Vapour phase refining

Q. No. 29 : Give the difference between –

(a) Mineral and ore

(b) Cast iron and Pig iron

Q. No. 30 : Out of C and CO which is a better reducing agent for ZnO.

Q. No. 31 : What is the role of Cryolite in the metallurgy of Al?

P-block elements

Q. No. 32 : Draw the structure of

(a) BrF_5 b) $H_2S_2O_7$ c) XeF_4 d) $XeOF_2$

Q. No. 33 : Why all the bonds in PCl_5 are not identical?

Q. No. 34 : Give the reasons why?

(a) Why NH_3 is more basic than PH_3.

(b) N_2 exist as diatomic molecule but phosphorous in P_4 molecular state.

(c) Nitrogen shows catenation properties less than phosphorous.

Q. No. 35 : Arrange the following in order of property indicated for each set –

(i) F_2, Cl_2, Br_2, I_2 $\longrightarrow$ increasing bond dissociation enthalpy

(ii) HF, HCl, HBr, HI $\longrightarrow$ increasing acid strength

(iii) NH_3, PH_3, ASH_3, SbH_3, BiH_3 $\longrightarrow$ increasing base strength

Q. No. 36 : Why do noble gases have relatively large atomic size?

Q. No. 37 : Give the structure of

(a) ICl^-_4 b) IBr^-_2 c) BrO^-_3

Q. No. 38 : a) SF_6 is known but SCl_6 is not. Why?

b) Out of H_2O and H_2S which one has higher bond angle and why?

Haloalkanes and Holarens

Q. 1) Which one of the following has the highest Dipole moment and how?

(i) CH_2Cl_2 (ii) $CHCl_3$ (iii) CCl_4

Q. 2) A hydrocarbon C_5H_{10} does not react with chlorine in dark but gives a single monochloro compound C_5H_9Cl in bright sunlight.

Identify the hydrocarbon and write the mechanism of the reaction.

Q. 3) Write the mechanism of the following reaction:

nBuBr + KCN $\rightarrow$ nBuCN+KBr

Q. 4) Out of $C_6H_5CH_2Cl$ and $C_6H_5CHClC_6H_5$, which is more easily hydrolysed by aqueous KOH.

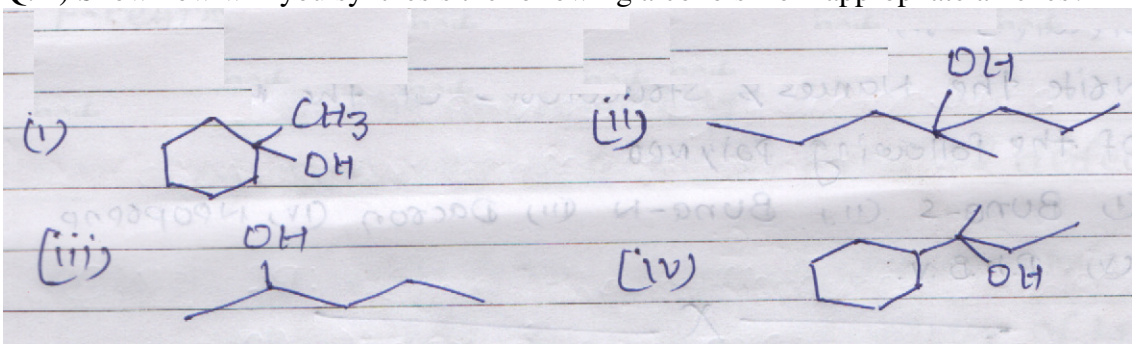
Alcohols, Phenols and Ethers

Q. 1) Show low will you synthesise :

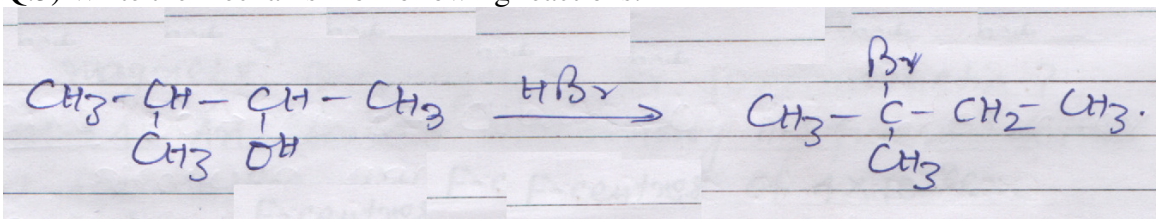
(i) 1 – phenyl ethanol from a suitable alkene

(ii) Cyclo-hexyl methanol using an alkyl halide by an SN-2 reaction and also by Sn-1 mechanism.

Q. 2) Show how will you synthesis the following alcohols from appropnate alkenes?



Q.3) Write the mechanism of following reactions.



Aldehydes Ketones and Corboxylic acids

Q.1) Explain following terms with suitable chemical reactions.

(i) Oxime (ii) Immine (iii) Schiff's Base

Q.2) An organic compound with the molecular formula C_9H_{10} forms 2, 4 – DNP derivative, reduces Tollen's reagent and under goes Cannizzaro reaction. On vigorous oxidation it gives 1, 2 – benzenedicarboxylic acid. Identify the compound.

Q.3) Give possible explanation for each of the following

(i) Cyclo-hexanone forms cyanohydrin in good yield but 2, 2, 6 – trimethylcnclohexanone does not.

(ii) There are two – NH_2 group in semcarbazide. However, only one is involved in the formation of semicarbazones.

POHYMER

Q.1) Define Thermoplastics & Thermosetting polymers with two example of each.

Q.2) How does the presence of double bonds in rubber molecules influence their structure and reactivity?

Q.3) Write the Names & structures of the monomers of the following polymer

(i) Buna-S (ii) Buna-N (iii) Dacron

(iv) Neoprene (v) P.H.B.V.