THE JAIN INTERNATIONAL SCHOOL, BILASPUR

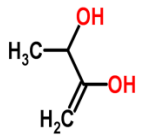
A JGI Institution

PRE BOARD EXAMINATION-3 (2013-14)

CLASS :	XII	SUBJECT :	CHEMISTRY	TIME :	3 Hours

MM : 70

1. Arrange the given compounds in decreasing order of their boiling points : CH_3Br, CH_3F, CH_3I, CH_3Cl. [1]
2. Describe the refining method of Zirconium . [1]
3. How does the surface area affect Chemisorption and Physisorption ? [1]
4. Name the reagent used in the conversion of Phenol to Benzoquinone. [1]
5. What are Vitamins? [1]
6. What happens when H_3PO_3 is heated? Write the equation. [1]



7. Give the IUPAC name of [1]
8. Draw the structure of 4-methylpent-3-en-2-one. [1]
9. An element has molar mass 2.7×10^{-2} kg mol^{-1} ,forms a cubic unit cell with edge length 405 pm. [2]
   If its density is 2.7×10^{3} kg m^{-3},what is the nature of cubic unit cell ?
10. What are Semiconductors ? How can you create n-type and p-type semiconductors ? [2]
11. Describe the role of the following : [2]
    i) Slag formation in the Blast furnace.
    ii) Graphite in the electrometallurgy of Aluminium.
12. Why do Haloarenes not undergo Nucleophilic substitution reaction ? Explain. [2]
13. Explain the Non-ideal behavior of a mixture of Ethanol and Acetone. [2]

14. Calculate the equilibrium constant of the reaction : $Cu(s) + 2\ Ag^+(aq) \longrightarrow Cu^{2+}(aq) + 2\ Ag(s)$ [2]
    $E^0_{Cell} = 0.46$ V
15. Draw the structures of XeF_2 and $HOClO_2$. [2]
16. Give reasons : [2]
    i) The transition metals generally form coloured compounds.
    ii) Transition metals act as good catalysts.
17. i)Write the Coupling reaction with Phenol. [2]
    ii) Convert Ethanamide to Methanamine.
18. Explain why Aliphatic Amines are stronger bases than Ammonia. [2]
19. 1 g of a non electrolyte solute dissolved in 50 g of Benzene lowered the freezing point of Benzene [3]
    By 0.40 K.The freezing point depression constant of Benzene is 5.12 K kg mol^{-1}.Find the molar mass of the solute.

20. i) What is the main difference between a Multimolecular colloid and a Macromolecular colloid? [3]
ii) What is Dialysis ?
21. Explain the Dry cell in detail with diagram. [3]
22. i)How are the following conversions carried out : [3]
a) Benzyl chloride to Benzyl alcohol.
b) Phenol to Salicylaldehyde.
ii) o-Nitrophenol is steam volatile while p-Nitrophenol is not.Give reason.
23.i) How does Glucose react with Bromine water ? Write the reaction. [3]
ii) The deficiency of which Vitamin causes "pernicious anaemia" ?
iii) What is Peptide linkage ?
24. i)How is Nylon-6,6 formed ? Why is it named so ? [3]
ii) Write the Monomers of PVC and Teflon.
25. i)Write about Artificial sweetening agents. [2+1]
ii) What is Tincture of Iodine ? Where is it used ?
26. i)Explain why Cu^{+} ion is not stable in aqueous solutions ? [3]
ii) Why is Ti^{2+} ion paramagnetic in nature ?
27. i)Write the IUPAC name of $[Co(NH_3)_3Cl_3]$. [3]
ii) Compare the hybridization and geometry of $[Ni(CO)_4]$ and $[Ni(CN)_4]^{2-}$
28. i)Explain the following terms :
a) Rate of a reaction b) Activation energy of a reaction. [2+3]
ii) The decomposition of NH_3 on a Platinum surface is Zero order reaction.What would be the rate of production of N_2 and H_2 if k= 2.5 x10^{-4} mol^{-1} L S^{-1} ?

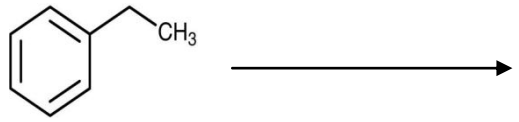
OR

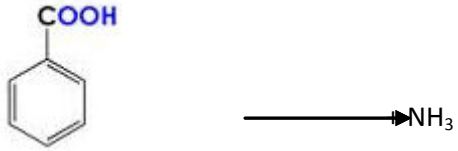
i) What is Order of a reaction ? Can it be determined from a balanced chemical equation ?
ii)In a First order reaction the concentration of the reactant is reduced from 0.6 mol L^{-1} to 0.2 mol L^{-1} in 5 minutes.Calculate the rate constant of the reaction.
29. i) Illustrate the following name reactions : [2+3]
a) Cannizzaro Reaction
b) Wolf Kishner Reduction
ii) Give simple Chemical test to distinguish between the following pairs of compounds :
a)Benzaldehyde and Acetophenone.
b) Ethanol and Propanal.

OR

i) Illustrate the following name reactions :
a) Rosenmund Reduction
b)Hell-Volhard-Zelinsky Reaction
ii) Complete each synthesis by giving products in the following:

$KMnO_4/OH^-$

a) 

b) 

30. a) Complete the following chemical equations : [2+3]

i) $PCl_3 + H_2O$ ----→

ii) $XeF_2 + H_2O$ -----→

b)Account for the following :

i) The boiling point of Noble gases is very low.

ii) ICl is more reactive than I_2.

iii) Nitrogen exists as N_2 while Phosphorus as P_4.

OR

a) Complete the following chemical equations :

i) $HCl + O_2$ ----→

ii) $I_2 + HNO_3$ -----→

b) Account for the following :

i) NH_3 forms Hydrogen bonds but PH_3 does not.

ii) PCl_5 cannot act as a reducing agent.

iii) $R_3P{=}O$ exists but $R_3N{=}O$ does not.

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