PRE-BOARD-3

 CLASS-XII , CHEMISTRY

Time-3 hr M.M-7

Instructions

All questions are compulsory

Q.1 to Q.5 carry 1 mark each

Q.6 to Q.10 carry 2 marks each

Q.11 to Q.22 carry 3 marks each

Q 23 carry 4 marks each

Q.24 to Q.26 carry 5 marks each

Q.1 Give one point of difference adsorption and absorption

Q.2 How is ethanol obtained from 2-Butene

Q.3.Why does NO2 dimerise ?

Q.4.Which would undergo SN1 reaction faster in the following pair and why ?

CH|3

CH3  CH2  Br and CH3  C  CH3

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Br

Q.5.Arrange the following in increasing order of their basic strength in aqueous solution:

CH3**.**NH2**,**(CH3)3N**,**(CH3)2NH

Q 6. Distinguish between 'rate expression' and 'rate constant' of a reaction

Q 7(i) Define colligative properties

(ii)Calculate the vapour pressure lowering of a 0.1 m aqueous solution of non-electrolyte at 750 C.(ΔH=9.720kcal/mol , P2=742.96 torr

Q.8. (i) Mn (II) shows maximum paramagnetic character amongst the divalent ions of the first transition series

(ii) Most of the transition metals do not displace hydrogen from dilute acids ,why?

Q.9 Explain why does colour of KMnO4 disappear when oxalic acid is added to its solution in acidic medium?

Q.10. Complete the following reactions

(i) C6H5NH2 + Br2(aq)-------🡪

(ii) C6H5NH2 +(CH3CO)2O----🡪

Q.11. (i) Draw the structure of pyrophosphate ion.

 (ii)PH3 forms bubbles when passed slowly in water but NH3 dissolves . Explain , why?

Q.12. (i)Iron has a body centred cubic cell with a cell edge of 286.5 pm. The density of iron is 7.87 g/cm3. Use this information to calculate the Avogadro’s number. {Atomic mass of Fe=56 g/mol

(ii)How does the structure of quartz and quartz glass differ from each other

 Q.13.(i) Give the name and structure of the initial material used in the industrial preparation of p henol

(ii) Write complete reaction for the bromination of phenol in aqueous and Non aqueous medium

 (iii)Explain why Lewis acid is not required inbromination of phenol

Q.14 Complete the following reaction

(1) Amide LiAlH4/H2o----------------🡪

(ii) C6H5N2+Cl-- +H3PO2 +H2O---------🡪

(iii)P--------Me-------C6H4NO2H2NNH2/Raney Ni----------------🡪

Q.!5.Two elements A and B form compounds having formula AB2 and AB4 . When dissolved in 20 g of benzene 1 g of AB2 lowers thefreezing poiont by 2.3 K whereas 1.0 g of AB4 lowers it by 1.3 K.The molal depression constant for benzene is 5.1 K kg/mol. Calculate the atomic masses of A and B

Q.16.Calculate the emf of the cell in which the reaction is

 Mg(s) + 2Ag+(aq)----------🡪Mg+2(aq) + 2Ag(s)

When , [Mg+2] =0.310 M and [Ag+]=1.0x10—4 M

Given E0Mg+2/Mg = ---2.37 V and E0Ag+/Ag= +0.80 V

Q.17. Explains the following terms

(i) Electrophoresis (ii) Coagulation (iii) Hardy Schulze rule

Q.18. Write down the IUPAC name for each of the following complexes and indicate the oxidation state electronic configuration and coordination number .Also give stereochemistry and magnetic moment of the complex

(i) [CrCl3(Py)3] (ii)K4[Mn(CN)6] (iii)Cs[FeCl4]

Q.19. (i) Explain why propanol has higher boiling point than that of the hydrocarbon butane?

(ii) Write the mechanism of hydration of ethane to yield ethanol.

Q.20.(i) Complete the following reaction

(ii)Explain the formation of Nucleic acid.

Q.21.(i) How does the presence of double bond in rubber molecules influence their structure and reactivity?

(ii) Discuss the main purpose of vulcanisation of rubber.

Q.22. (i) Name a substance which can be used as an antiseptic as well as disinfectant

(ii) Name a sweeting agent used in the preparation of sweets for a diabetic patient.

(iii) What are the main constituent of Dettol?

Q.23 Dr. Saxena , head of metallurgical division always insisted for refining of copper by electrolytic method instead of other convenient methods inspite of the fact that it is power consuming and takes longer time

Based on the above passage answer the following questions.

(i)Is electrolytic refining enviormental friendly or economical?

(ii) How cathode anode and electrolyte used in this process ?

(iii)Write the value shown by Mr. Saxena

Q.24. Predict the product when cyclohexane carbaldehyde react with following reagents

(i) C6H5MgBr followed by H3O+

(ii)Tollen’s reagent

(iii)Semicarbazide in the weakly acidic medium

(iv) Excess of ethanol in the presence of acid

(v)Zinc amalgam and dilute hydrochloric acid

Q.25. (i) Considering the parameters such as bond dissociation enthalpy, electron gain enthalpy and hydration enthalpy, compare the oxidising power of F2 and Cl2

(ii) Give two examples to show the anomalous behaviour of fluorine

Q.26.(i) Mention the factors that affect the rate of a chemical reaction.

(ii) A reaction is of second order with respect to a reactant . How is the rate of reaction affected if the concentration of the reactant is

1. Doubled ?
2. Reduced to half