CBSE 12th Chemistry 2009 Unsolved Paper Outside Delhi

CBSE 12th Physics 2009 Unsolved Paper Outside Delhi

TIME - 3HR. | QUESTIONS - 30

THE MARKS ARE MENTIONED ON EACH QUESTION

SECTION - A

Q.1. How do metallic and ionic substances differ in conducting electricity? *1 mark*

Q.2. What is the 'coagulation' process? *1 mark*

Q.3. What is meant by the term 'pyro metallurgy'? *1 mark*

Q.4. Why is red phosphorus less reactive than while phosphorus? *1 mark*

Q.5. Give the IUPAC name of the following compound: *1 mark*

$$H_2C = CH - \underset{\displaystyle OH}{\underset{|}{CH}} - CH_2 - CH_3$$

Q.6.Write the structural formula of $1-$ phenylpentan $-1-$ one. *1 mark*

Q.7. Arrange the following compounds in an increasing order of basic strengths in their aqueous solutions: *1 mark*

$NH_3, CH_3NH_2, (CH_3)_2NH, (CH_3)_3N$

Q.8. What does '6.6' indicate in the name nylon-'6.6'? *1 mark*

SECTION - B

Q.9. What type of cell is a lead storage battery? Write the anode and the cathode reactions and the overall cell reaction occurring in the use of a lead storage? *2 marks*

OR

Two half cell reaction of an electrochemical cell are given below:
$MnO_4^- + 8H^+(aq) + 5e^-, \longrightarrow Mn^{2+}(aq) + 4H_2O\ (l), E^0 = +1.51V Sn^{2+}(aq) \longrightarrow Sn^{4+}(aq) + 2e^-, E^0 = +0.51V$
Construct the redox equation from the two half cell reactions and predict if this reaction favors formation of reactions or product shown in the equation.

Q.10. A solution of $CuSo_4$ is electrolyzed for 10 minutes with a current of 1.5 amperes. What is the mass of copper deposited at the cathode? *2 mark*

Q.11. Describe the underlying principle of each of the following metal refining methods:
(i) Electrolytic refining of metals
(ii) Vapour phase refining or metals. *2 marks*

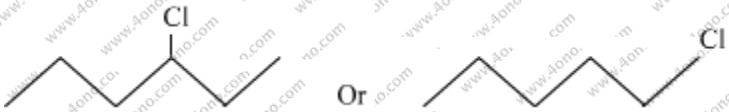
Q.12. Complete the following chemical reaction equations. *2 marks*
(i) $XeF_2 + H_2O \longrightarrow$
(ii) $PH_3 + HgCl_2 \longrightarrow$

Q.13. Complete the following chemical reaction equations: *2 marks*
(i) $MnO_4^-(aq) + C_2O_4^{2-}(aq) + H^+(aq) \longrightarrow$
(ii) $Cr_2O_7^{2-}(aq) + Fe^{2+}(aq) + H^+(aq) \longrightarrow$

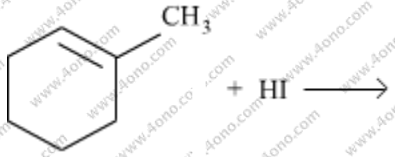
Q.14. Which one in the following pairs undergoes S_N1 Substitution reaction faster and why? *2 marks*

(i)

(ii)



Q.15. Complete the following reaction equations: *2 marks*
(i)



(ii) $CH_3CH_2CH = CH_2 + HBr \rightarrow$

Q.16. Name the four has bases present in DNA. Which one of these is not present in RNA? *2marks*

Q.17. Name two fat soluble vitamins, their sources and the diseases caused due to their deficiency in diet. *2 marks*

Q.18. Differentiate between molecular structures and behaviors of thermoplastic and thermosetting polymers. Give one example of each type. *2 marks*

SECTION - C

Q.19. A first reaction has rate constant of $0.0051\ min^{-1}$. If we begin with 0.10 M concentration of the reactant. What concentration of the reactant will be left after 3 hours? *3 marks*

Q.20. Silver crystallizes with face-centered cubic unit cells. Each side of the unit cell has a length of 409 pm. What is the radius of an atom of silver? (Assume that each face atom is touching the four corner atoms.) *3 marks*

Q21. A copper-silver cell is set up. The copper ion concentration in it is 0.10 M. The concentration of silver is not known. The cell potential measured 0.422 V Determine the concentration of silver ion in the cell. *3 marks*

Given: $E^0_{Ag+/Ag} = +0.80\ V, E^0_{Cu^{2+}/Cu} = +0.34\ V.$

Q.22. What happens in the following activities and why? *3 marks*

(i) An electrolyte is added to a hydrated ferric oxide sol in water.

(ii) A beam of light is passed through a colloidal solution.

(iv) An electric current is passed through a colloidal solution.

Q.23. Giving a suitable example for each, explain the following: *3 marks*

(i) Crystal field splitting

(ii) Linkage isomerism

(iii) Ambidentate ligand

OR

Compare the following complexes with respect to structural shapes of units magnetic behavior and hybrid orbitals involved in units:

$$[Co(NH_3)_6]^{3+}, [Cr(NH_3)_6]^{3+}, Ni(CO)_4$$

$$At.Nos: Co = 27, Cr = 24, Ni = 28$$

Q.24. Classify the following as primary, secondary and tertiary alcohols: *3 marks*

(i)

$$CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\underset{|}{\overset{|}{C}}}} - CH_2OH$$

(ii) $H_2C = CH - CH_2OH$

(iii) $CH_3 - CH_2 - CH_2 - OH$

Q.25. How would you account for the following:

(i) many of the transition elements and their compounds can act as good catalysts.

(ii) The metallic radii of the third (5d) series of transition elements are virtually the same as those of the corresponding members of the seconds series.

(iii) There is a greater range of oxidation states among the actinoids than among the lanthanoids. *3 marks*

Q.26. Complete the following reaction equations: *3 marks*

(i)

$$R - \overset{\overset{O}{\|}}{C} - NH_2 \xrightarrow[H_2O]{LiAlH_4}$$

(i) $C_6H_5N_2Cl + H_3PO_2 + H_2O \longrightarrow$

(ii) $C_6H_5NH_2 + Br_2(aq) \longrightarrow$

Q.27. Describe the following substance with one suitable example of each type: *3 marks*

(i) Non-ionic detergents

(ii) Food preservatives

(iii) Disinfectants

SECTION - D

Q.28. (a) Define the following terms:

(i) Mole fraction

(ii) Van't Hoff factor

(b) 100 mg of a protein is dissolved in enough water to male 10.0 mL of a solution. It this solution has an osmotic pressure of 13.3 mm Hg at 25^0C, What is the molar mass of protein? ($R = 0.0821\ L\ atm\ mol^{-1}$ and $760\ mm\ Hg = 1\ atm$). *5 marks*

Or

(a) What is meant by:

Colligative properties

(b) what concentration of nitrogen should be present in a glass of water at room temperature? Assume a temperature of 25^0 C, total pressure of 1 atmosphere and mole fraction of nitro gen in air of 0.78 [K_H] for nitrogen $= 8.42 \times \frac{10^{-7}M}{mm}$ Hgl

Q.29. (a) Draw the structure of the following:

(i) $H_2S_2O_8$

(ii) $HClO_4$

(b) How would you account for the following:

(i) NH_3 is a stronger base than PH_3

(ii) Sulphur has a greater tendency for catenations than oxygen.

(iii) F_2 is a stronger oxidizing agent than Cl_2. *5 marks*

Or

(a) Draw the structures of the following:

(i) $H_2S_2O_7$

(ii) $HClO_3$

(b) Explain the following observations:

(i) In the structure of HNO_3, the N-O bond ($121\ pm$) is shorter than the $N-OH$ Bond (140 pm).

(ii) All the $P-Cl$ bonds in PCl_5 *are not equivalent*.

(iii) ICI is more reactive than I_2.

Q.30. (a) Write chemical equations to illustrate the following name bearing reactions:

(i) Cannizzaro's reaction

(ii) Hell-Volhard-Zelinsky reaction

(b) Give chemical tests to distinguish between the following pairs of compounds:

(i) Propanal and Propanone

(ii) Acetophenone and Ben-Zophenone

(iii) Phenol and benzoic acid. *5 marks*

OR

(a) How will you bring about the following conversions:

(i) Ethanol to3-hydrixybutanal

(ii) Benzaldehyde to Benzophenone

(b) An organic compound a has the molecular formula $C_8H_{16}O_2$. It gets hydrolyzed with dilute sulphuric acid and gives a carboxylic acid B and an alcohol C. Oxidation of C with chromic acid also produced B. C on dehydration reaction gives but-1-ene. Write equations for the reactions involved.