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Note

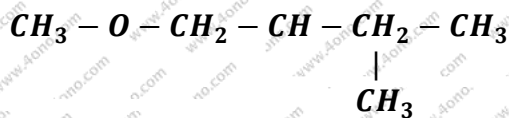
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CBSE 12th Chemistry 2008 Unsolved Paper Outside Delhi

TIME - 3HR. | QUESTIONS - 30

THE MARKS ARE MENTIONED ON EACH QUESTION

- Q.1.** What is total number of atoms per unit cell in a face-centered cubic (fcc) crystal structure? *1 Mark*
- Q.2.** Express the relation between the conductivity and the molar conductivity of a solution. *1 Mark*
- Q.3.** Of physisorption and chemisorption which type of adsorption has a higher enthalpy of adsorption? *1 Mark*
- Q.4.** Why is the bond angle in PH_3 molecule lesser than that in NH_3 molecule? *1 Mark*
- Q.5.** Write the IUPAC name of the following compound: *1 Mark*



- Q.6.** Draw the structure of the compound whose IUPAC name is 4-chlopentan 2-one. *1 Mark*
- Q.7.** Write two main functions of carbohydrates in plants. *1 Mark*
- Q.8.** Devine the term 'Polymerization'. *1 Mark*

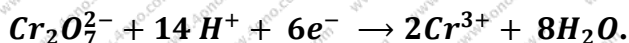
SECTION-B

- Q.9.** State Raoult's law for solutions, of volatile liquid components taking a suitable example, explain the meaning of positive deviation from Raoult's law. *2 Marks*

Or

Define the term 'osmotic pressure'. Describe how the molecular mass of a substance can be determined on the basis of osmotic pressure measurement.

- Q.10.** Consider the reaction: *2 Marks*



What is the quantity of electricity in coulombs need to reduce 1 mol of $Cr_2O_7^{2-}$?

Q.11. The resistance of a conductivity cell containing 0.001 M KCl solution at 298 K is 1500 Ω . What is the cell constant if the conductivity of 0.001 M KCl solution at 298 K is $0.146 \times 10^{-3} S cm^{-1}$? 2 Marks

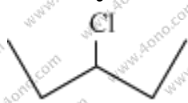
Q.12. Answer the following: 2 Marks

- Which neutral molecule would be isoelectric with ClO^- ?
- Of Bi (V) and Sb (V) which may be a stronger oxidizing agent and why?

Q.13. Write complete chemical equations for: 2 Marks

- Oxidation of Fe^{2+} by $Cr_2O_7^{2-}$ in acid medium.
- Oxidation of $S_2O_3^{2-}$ by MnO_4^- in neutral aqueous medium.

Q. 14. (i) Why are halo alkanes more reactive towards nucleophilic substitution reactions than haloarenes? 1 Mark
(ii) Which one of the following two substances undergoes S_N1 reaction faster and why? 1 Mark



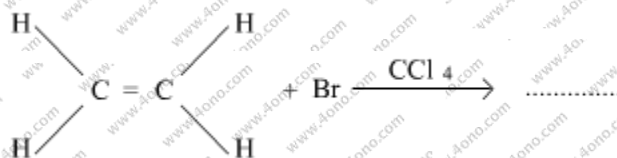
Or



Q.15. Complete the following reaction equations: 2 Marks

(i) $C_2H_5N_2Cl + KI \rightarrow \dots$,

(ii)



Q. 16. Write one chemical reaction each to illustrate the following: 2 Marks

- Hoffmann's bromamide reaction
- Gabriel phthalimide synthesis

Q.17. (i) Arrange the following in an increasing order of basic strength in water:

$C_6H_5NH_2$, $(C_2H_5)_2NH$, $(C_2H_5)_3N$ and NH_3 . 1 Mark

(ii) Arrange the following in increasing order of basic strength in gas phase:

$C_2H_5NH_2$, $(C_2H_5)_2NH$, $(C_2H_5)_3N$ and NH_3 . 1 Mark

Q.18. What are thermoplastic and thermosetting polymers? Give one example of each. 2 Marks

SECTION - C

Q.19. Silver crystallizes in a fcc lattice. The edge length of its unit cell is $4.077 \times 10^{-8} cm$ and its density is $10.5 g cm^{-3}$. Calculate on this basis the atomic mass of silver. ($N_A = 6.02 \times 10^{23} mol^{-1}$) 3 Marks

Q. 20. A solution containing 8 g of a substance in 100 g of diethyl ether boils at 36.86 °C, where as pure ether boils at 36.60 °C. Determine the molecular mass of the solute. (For ether $K_b = 2.02 \text{ K kg mol}^{-1}$) 3 Marks

or

Calculate the temperature at which a solution containing 54 g of glucose, $C_6H_{12}O_6$, in 250 g of water will freeze. [K_f for water = $1.86 \text{ K kg mol}^{-1}$]

Q 21. Explain what is observed when 3 Marks

- KCl, an electrolyte, is added to hydrated ferric oxide sol,
- An electric current is passed through a colloidal solution,
- A beam of light is passed through a colloidal solution.

Q. 22. What chemical principle is involved in choosing a reducing agent for getting the metal from its oxide ore? Consider the metal oxides, Al_2O_3 and Fe_2O_3 , and justify the choice of reducing agent in each case. 3 Marks

Q. 23. Describe the oxidizing actions of potassium dichromate and write the ionic equations for its reaction with 3 Marks

- iodide
- iron II solution
- H_2S .

Q.24. (a) What is the basis of formation of the spectrochemical series?

(b) Draw the structures of geometrical isomers of the following coordination complexes:



(en = ethylenediamine and atomic number of Co is 27). 3 Marks

Q. 25. (a) Name the reagents and write the chemical equations for the preparation of the following compounds by Williamson's synthesis: 3 Marks

- Ethoxybenzene
- 2-Methyl-2-methoxypropane
- Why do phenols not give the protonation reaction readily?

Q. 26. What happen when D-glucose is treated with the following reagents: 3 Marks

- HI
- Bromine water
- HNO_3

Q. 27. Mention one use each of the following drugs: 3 Marks

- Ranitidine
- Paracetamol
- Tincture of iodine.

SECTION-D

Q. 28. (a) Define the following: 5 Marks

- Order of reaction
- Activation energy of reaction

(b) $A + 2B \rightarrow 3C + 2D$. The ratio of disappearance of B is $1 \times 10^{-2} \text{ mol/L/S}$. What will be

(i) Rate of the reaction (ii) Rate of change in concentration of A and C?

Or

- (a) List the factors on which the rate of a chemical reaction depends.
(b) The half-life for decay of radioactive ^{14}C is 5730 years. An archaeological artefact containing wood has only 80% of the ^{14}C activity as found in living trees. Calculate the age of the artefact.

Q. 29. Assign reasons for the following: 5 Marks

- (i) Sulphur vapour is paramagnetic.
(ii) Ammonia (NH_3) has greater affinity for protons than phosphine (PH_3).
(iii) The negative value of electron gain enthalpy of fluorine is less than that of chlorine.
(iv) SF_6 is much less reactive than SF_4 .
(v) Of the noble gases only xenon is known to form well-established chemical compounds.

Or

- (a) Describe the favorable conditions for the manufacture of (i) ammonia by Haber's process, and (ii) sulphuric acid by contact process.
(b) Draw the structures of the following:
(i) $\text{PCl}_5(\text{g})$
(ii) $\text{S}_8(\text{g})$
(iii) $\text{ClF}_3(\text{g})$

Q. 30. (a) Giving a chemical equation for each, illustrate the following processes: 5 Marks.

- (i) Cannizzaro reaction
(ii) Acetylation
(iii) Decarboxylation
(b) State chemical tests to distinguish between the following pairs of compounds:
(i) Propanal and Propanone
(ii) Phenol and Benzoic acid



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