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CBSE 12th Chemistry 2014 Unsolved Paper Delhi Board

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CBSE 12th Chemistry 2014 Unsolved Paper Delhi Board

TIME - 3HR. | QUESTIONS - 30

THE MARKS ARE MENTIONED ON EACH QUESTION

SECTION – A

Q.1 Give the example each of 'oil of water' and 'water in oil' emulsion. *1 Mark*

Q.2 Which reducing agent is employed to get copper form the leached law grade copper ore? *1 Mark*

Q.3. Which of the following is more stable complex and why? *1 Mark*
$[Co(NH_3)_6]^{3+}$ **and** $[Co(en)_3]^{3+}$

Q.4. Write the IUPAC name of the compound. *1 Mark*

Q.5. Which of the following isomers is more volatile: o-nitrophenol or p-nitrophenol. *1 Mark*

Q.6. What are isotonic solution? *1 Mark*

Q.7. Arrange the following compounds in increasing order of solubility in water: *1 Mark*

$$C_6H_5NH_2, (C_2H_5)_2NH, C_2H_5NH_2$$

Q.8. Which of the two components of starch is water soluble? *1 Mark*

SECTION-B

Q.9. An element with density 11.2 g cm^{-3} forms a f.c.c. lattice with edge length of 4×10^{-8} cm. Calculate the atomic mass of the element.
(Given: $N_A = 6.022 \times 10^{23}\ mol^{-1}$). *2 Marks*

Q.10. Examine the given defective crystal *2 Marks*

A^+ B^- A^+ B^-	B^- 0 B^- A^+	A^+ B^- A^+ B^-	B^- A^+ 0 A^+	A^+ B^- A^+ B^-

Answer the following question:
(i) What type of stoichiometric defect is shown by the crystal?
(ii) How is the density of the crystal affected by this defect?
(iii) What type of ionic substances show such defect?

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Q.11. Calculate the mass of compound (molar mass =256 g mol^{-1}) to be dissolved in 75 g of benzene to lower its freezing point by $0.48\ K$ ($K_f = 5.12\ Kg\ mol^{-1}$) *2 Marks*

Q.12. Define an ideal solution and write one of its characteristics. *2 Marks*

Q.13. Write two differences between 'order of reaction' and 'molecularity of reaction'. *2 Marks*

Q.14. Outline the principles behind the refining of metals by the following methods: *2 Marks*

(i) Zone refining method

(ii) Chromatographic method

Q.15. Complete the following chemical equations: *2 Marks*

(i) $Ca_3P_2 + H_2O \longrightarrow$

(ii) $Cu + H_2SO_4\ (conc.) \longrightarrow$

Or

Arrange the following in the order of property indicated against each set:

(i) HF, HCL, HBr, HI – increasing bond dissociation enthalpy.

(ii) H_2O, H_2S, H_2Se, H_2Te **– Increasing acidic character.**

Q.16. Write the IUPAC name of the complex $[Cr(NH_3)_4Cl_2]^+$**. What type of isomerism does it exhibit?** *2 Marks*

Q.17. (i) Which alkyl halide from the following pair is chiral and undergoes faster S_N2 **reaction?** *1 Mark*

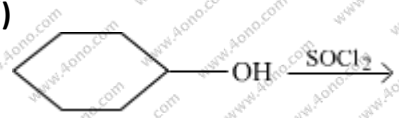
(ii) Out of S_N1 **and** S_N2 **which reaction occurs with**

(a) Inversion of configuration

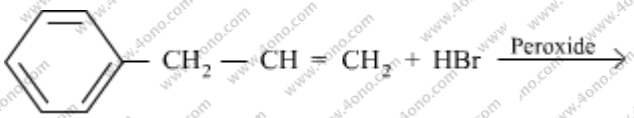
(b) Racemization

Q.18. Draw the structure of major monohalo product in each of the following reactions: *2 Marks*

(i)



(ii)



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SECTION-C

Q.19. (a) In reference to freundlich adsorption isotherm write the expression for adsorption of gases on solids in the form of an equation. *1 Mark*

(b) Write an important characteristic of lyophilic sols. *1 Mark*

(c) Based on type of particles of dispersed please, give one example each of associated colloid and multimolecular colloid. *1 Mark*

Q.20. (a) Draw the structure of the following molecules: *3 Marks*

(i) $XeOF_4$

(ii) H_2SO_4

(b) Write the structural difference between white phosphorus and red phosphorus.

Q.21. Account for the following: *3 Marks*

(i) PCl_5 is more covalent then PCl_3.

(ii) Iron on reaction with HCl Forms $FeCl_2$and not $FeCl_3$.

(iii) The two O-O bond lengths in the ozone molecule are equal.

Q.22. The following data were obtained during the first thermal decomposition of SO_2Cl_2 at a constant volume: *3 Marks*

$$SO_2Cl_2(g)SO \longrightarrow SO_2(g) + Cl_2(g)$$

Experiment	Time/s^{-1}	Total pressure/atm
1	0	0.4
2	100	0.7

Calculate the rate constant (Given: Log 4 = 0.6021, log 2 = 0.3010)

Q.23. (i) Give two examples of macromolecules that are chosen as drug targets.

(ii) What are antiseptics? Give an example.

(iii) Why is use of aspartame limited to cold foods and soft drinks? *3 Marks*

Q.24. (i) Deficiency of which vitamin causes night-blindness? *1 Mark*

(ii) Name the base that if found in nucleonic of RNA only. *1 Mark*

(iii) Glucose on reaction with HI given n-hexane. What goes it suggest about the structure of glucose? *1 Mark*

Q.25. After the ban on plastic bags, students of one school decided to make the people aware of the harmful effects of plastic bags on environment and Yamuna river. To make the awareness more impactful they organized rally by joining hands with other schools and distributed paper bags to vegetable vendors, shopkeepers and departmental stores. All students pledged not to use polythene bags in future to save Yamuna river. *3 Marks*

After reading the above are above message, answer the following questions:

(i) What values are shown by the students?

(ii)What are biodegradable polymers.? Give on example.

(iii) Is polythene a condensation or an addition polymer?

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Q.26. (a) Write the mechanism of the following reaction.

$$CH_3CH_2OH \xrightarrow{HBr} CH_3CH_2Br + H_2O$$

(b) Write the equation involved in Reimer-Tiemann reaction. *3 Marks*

Q.27. Give the structure of A, B and C in the following reactions: *3 Marks*

(i) $CH_3Br \xrightarrow{KCN} A \xrightarrow{LiA/H_4} B \xrightarrow[273K]{HNO_2} C$

(ii) $CH_3COOH \xrightarrow[\Delta]{NH_3} A \xrightarrow{Br_2+KOH} B \xrightarrow{CHCl_3+NaOH} C$

OR

How will you convert the followings:
(i) Nitrobenzene into aniline,
(ii) Ethanoic acid into methanamine
(iii) Aniline into N-phenylethanamide (write the chemical equations involved).

SECTION - D

Q.28. (a) Define the following terms: *5 Marks*
(i) Limiting molar conductivity,
(ii) fuel cell

(b) Resistance of a conductivity cell filled with 0.1 $mol\ L^{-1} KCl$ solution is 100 w. If the resistance of the same cell when filled with 0.02 $mol\ L^{-1} KCl$ solution is 520 W. Calculate the conductivity and molar conductivity of 0.02 $mol\ L^{-1} KCl$ solution. The conductivity of0.1 $mol\ L^{-1}\ KCl$ solution is $1.29 \times 10^{-1}\ W^{-1} cm^{-1}$.

Or

(a) State faraday's first law of electrolysis. How much charge in terms of Faraday's required for the reduction of 1mol of Cu^{2+} to Cu.

(b) Calculate emf of the following cell at

$$298\ K : Mg\ (s) \left| Mg^{2+}(0.1\ M) \right| \left| Cu^{2+}(0.001) \right| Cu(s)$$

$$\left[Given\ E^0_{cell} = +2.71V, 1\ F = 96500\ C\ mol^{-1}\right].$$

Q.29. (a) How to you prepare: *5 Marks*
(i) $K_2MnO_4 from\ MnO_2$?
(ii) $Na_2Cr_2O_7\ from\ Na_2CrO_4$?

(b) Account for the following:
(i) Mn^{2+} **is more stable than** Fe^{2+} **towards oxidation to + 3 state.**
(ii) The enthalpy of atomization is lowest for Zn in 3d series of the transition elements.
(iii) Actinoid elements show wide range of oxidation states.

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Or

(i) Name the element of 3d transition series which shows maximum number of oxidation states. Why does it show so?

(ii) Which transition metal of 3d series has positive E^0 (M^{2+}/M) value and why?

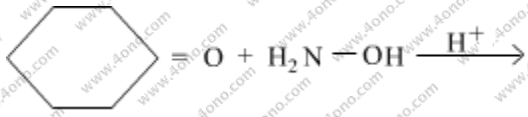
(iii) Out of Cr^{3+} and Mn^{3+} which is a stronger oxidizing agent and why ?

(iv) Name a member of the lanthanoid series which is well known to exhibit +2 oxidation state.

(v) Complete the following equation: $MnO_4^- + 8H^+ + 5e^- \longrightarrow$

Q.30. (a) write the products of the following reactions:

(i)



(ii) $2C_6H_5CHO + conc.NaOH \longrightarrow$

(iii) $CH_3COOH \xrightarrow{Cl_2/P}$

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

(i) Benzaldehyde and benzoic acid,

(ii) Propanal and propanone. *5 Marks*

Or

(a) Account for the following:

(i) CH_3CHO is more chemical reactive than CH_3COCH_3 towards reaction with HCN.

(ii) Carboxylic acid is a stronger acid than phenol.

(b) Write the chemical equations to illustrate the following name reactions:

(i) Wolff-Kirsher reduction

(ii) Aldol condensation

(iii) Cannizzaro reaction

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