INTERNATIONAL INDIAN SCHOOL DAMMAM

SECOND TERM EXAMINATION (2014 - 2015)

CLASS – XII **SET - A** **SUBJECT : CHEMISTRY**

Time allowed: 3 hours **Maximum Marks: 70**

General Instructions:

a) All the questions are compulsory.

b) Questions 1 to 5 are very short answer type questions and carry one mark each.

c) Questions 6 to 10 carry two marks each.

d) Questions 11 to 22 carry three marks each.

e) Questions 23 is value based question carrying four marks.

f) Questions 24 to 26 carry five marks each.

g) Logarithmic table is allowed but not calculator .

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1. What type of substances form lyophobic sols ?

2. Write the name of two narcotics which are used as analgesics .

3. What is the monomeric repeating unit of Nylon 66 ?

4. .What is ambidentate nucleophiles ?

5. Give the IUPAC name of $O_2N - C_6H_4 - OCH_3$ (p)

6. Draw the structures of white phosphorus and red phosphorus. Which one of these two types of phosphorus is more reactive and why?

7. Arrange the following compounds in the increasing order of their boiling points:

(i) Benzaldehvde,p-Tolualdehyde, p-Nitrobenzaldehyde, Acetophenone

(Nucleophilic addition reaction)

(ii) $CH_3CH_2CH(Br)COOH$, $CH_3CH(Br)CH_2COOH$, $(CH_3)_2CHCOOH$, $CH_3CH_2CH_2COOH$ (acid strength)

8. (a) Write the electronic configurations of the elements with the atomic no. 109.

(b) Transition metals form interstitial compounds . Why ?

9. Derive the general form of the expression for the half-life of a first-order reaction.

10. With the help of suitable diagram , illustrate two types of non – ideal solution .

11.(a) Account for the following :

(i) Zinc not extracted from zinc oxide through reduction using CO.

(ii) Extraction of copper is more difficult from pyrite ore than its oxide ore through reduction .

(b) What is the role of silica in the metallurgy of copper ?

12. (a) How will you bring about the following conversion :

(i) PCl_3 into H_3PO_3 . (ii) NaCl into Cl_2 .

(b) With what neutral molecule is ClO^- isoelectronic ? Is that molecule a Lewis base ?

13. Explain the following observations:

(i) Transition elements generally form coloured compounds.

(ii) Hydrated $CuSO_4$ is blue where as anhydrous $CuSO_4$ is white.

(iii) The members of the actinoid series exhibit a larger number of oxidation states than the corresponding members of the lanthanoid series.

14. (a)Why do we get different products at cathode when electricity is passed through molten NaCl and aqueous NaCl separately ?

(b) Draw only curves to show how the molar conductance of strong electrolytes varies with dilutions

15.(a) Howdoes the presence of double bonds in rubber molecules influence their structure and reactivity

(b) Write the name and structure of monomer of " Neoprene" .

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

(b) Give a chemical test to distinguish between phenol and cyclohexanol .

17. Describe the following with one example :

(i) Broad spectrum antibiotics (ii) Antihistamines

18. (a) Give reasons for the following :

(i) Ethyl iodide undergoes SN^2 reaction faster than ethyl bromide .

(ii) C – X bond length in halo benzene is smaller than C– X bond length in $CH_3 - X$.

(b) How will you convert bromo methane to propanone .

19. (a) Complete the following chemical equations :

(i) $Cr_2O_7^{2-} + H^+ + Fe^{2+}$ --------> ? (ii) $MnO_4^- + S_2O_3^{2-} + H_2O$ -------> ?

(b) Calculate the ' spin only ' magnetic moment of M^{3+} ion (z = 58) .

20. The following results have been obtained during the kinetic studies of the reaction:
$2A + B = C + D$

Experiment	[A] / mol L^{-1}	B/ mol L^{-1}	Initial rate of formation of D/mol L^{-1} min^{-1}
I	0.10	0.10	1.5×10^{-3}
II	0.20	0.20	3.0×10^{-3}
III	0.20	0.40	6.0×10^{-3}

(i) Write the rate law for the reaction

(ii) Calculate the value of rate constant for the reaction .

(iii) Which of the following reaction mechanism is constant for the rate law found in (i)

(a) $A + B = C + E$ (slow) : $A + E = D$ (fast)

(b) $B = C + E$ (slow) : $A + E = F$ (fast) : $A + F = D$ (fast)

21. What do you mean by psedo unimolecular reaction . Distinguish between ' rate expression ' and ' rate constant ' of a reaction .

22. Calculate the boiling point of a solution containing 0.61 g of benzoic acid in 5 g of CS_2 . Assuming 84% dimerisation of acid , the boiling point and K_b of CS_2 are 46.2^0C and 2.3 K kg mol^{-1} respectively .

OR

A solution containing 30 g of non-volatile solute exactly in 90 g of water has vapour pressure of 2.8 kPa at 298 K. Further, 18 g of water is then added to the solution and the new vapour pressure becomes 2.9 kPa at 298 K. Calculate:(i) molar mass of the solute (ii) vapour pressure of water at 298 K.

23. Sahil got cut while using blade for sharpening his pencil . His science teacher Ruhi went to chemistry lab and brought ferric chloride solution and applied it on the cut . Bleeding stopped after some time .

(i) What values are possessed by Ruhi ?

(ii) Is blood colloidal solution ?What is the charge on blood ?

(iii) Why does bleeding stop on applying $FeCl_3$?

(iv) Why ferric chloride were preferred over KCl by Ruhi ?

24. (a) Give reasons for the following :

(i) Enthalpy of dissociation for F_2 is smaller than that for Cl_2

(ii) Dioxygen is a gas but sulphur a solid?

(b) Draw the structures of the following molecules :

(i) BrF_3 (ii) $H_4 P_2 O_7$ (iii) $XeOF_4$

OR

(a) Account for the following :

(i) Structure of Xenon fluoride can not be explained by V.B.T.

(ii) SCl_6 is not known but SF_6 is known .

(iii) Oxygen shows catenation properties less than sulphur ?

(b) Draw the structures of the following molecules :

(i) XeO_3 (ii) $H_2S_2O_8$

25. (a) Define the following terms : (i) Limiting molar conductivity (ii) corrosion

(b) A Voltaic cell is set up at 25°C with the following half cells Al^{3+}(0.001 M) and Ni^{2+} (0.50M) . Write an equation for the reaction that occurs when the cell generates an electric current and determine the cell potential. (Given E^0 Ni^{2+}/Ni = - 0.25 V E^0 Al^{3+}/Al = - 1.66 V)

OR

(a) Define the following terms : (i) Kohlrausch law of independent migration of ions (ii) Secondary cell.

(b) How many grams of silver could be plated out on a serving tray by electrolysis of a solution containing silver in + 1 oxidation state for a period o 8 hours at a constant current of 8.46 amperes ?What is the area of the tray if the thickness of the silver plating is 0.00354 cm ? Density of silver is 10.5 gcm^{-3} (Atomic mass of Ag = 107.8)

26. (a) Write the products of the following reactions:

(i) $C_6H_5CHO \xrightarrow{NH_2NHCONH_2}$? (ii) $C_6H_5COCl \xrightarrow{H_2/pd,BaSO_4}$? (iii) $CH_3COOH \xrightarrow{Cl_2/P}$

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

(i) Formic acid and acetic acid (ii) Acetophenone & benzophenone

OR

(a) Account for the following:

(i) p - Nitrobenzoic acid has higher pKa value than benzoic acid

(ii) Cyclohexanone forms cyanohydrin in good yield but 2,2,6-trimethylcyclohexanone does not.

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

(i) Clemenson reduction (ii) Crossaldol condensation (iii) Cannizzaro reaction

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