



Shri Vile Parle Kelavani Mandal's
C.N.M. School & N.D. Parekh Pre-Primary School
Second Prelim Examination (2007-08)

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Subject: Chemistry

Std. X

Max. Marks: 80

Time: 1½ hours

Answers to this paper must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes.

This time is to be spent in reading the question paper.

The time given at the head of this paper is the time allowed for writing the answers.

This paper consists of 5 pages.

This paper is divided into 2 Sections.

You are to answer all questions from Section I and 4 questions from Section II.

The intended marks for questions or parts of questions are given in brackets [].

Section I (40 marks)

All questions in this section are compulsory.

Question 1

- (a) Give only the *molecular formula* of the compound referred to in the statements below :-
- It is used as an electrolyte when electroplating with silver.
 - A red solid compound that gives off a greenish-yellow gas when heated with conc. HCl.
 - A gas which when bubbled continuously through an aqueous copper salt solution gives a light blue precipitate and then a deep blue solution.
 - A non-volatile acid that gives a white precipitate on being added to lead nitrate solution.
 - A colourless basic oxide which turns yellow when heated.
- (b) Name the following :-
- A strong monobasic acid containing chlorine.
 - Dilute solution of this acid is used as vinegar.
 - Organic compound obtained when water gas is subjected to high temperature and pressure in the presence of metal oxide catalysts.
 - The process whereby an ore is converted into its oxide by heating in the absence of air.
 - The ion formed by the association of a water molecule with a hydrogen ion.
- (c) Give the answer in one word :-
- At which electrode does oxidation occur during electrolysis ?
 - How many electron shells does Potassium have ?
 - The empirical formula of a compound is CH_2O . The ratio of its molecular mass to its empirical formula mass is 6. What is the name of the compound ?
 - What is the colour of the gas given out when sodium nitrate is heated ?
 - What must be added to aqueous potassium hydroxide to get ethanol and potassium iodide as products.

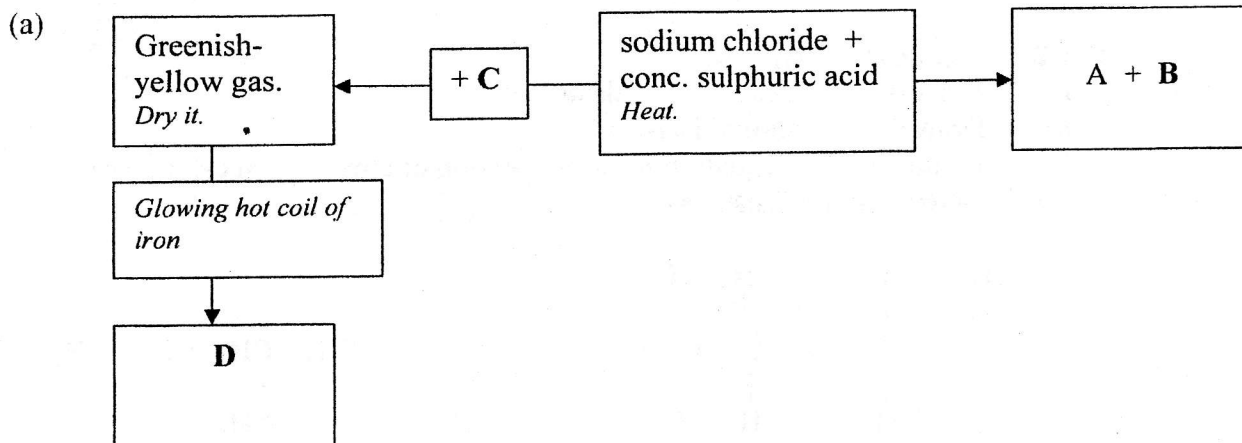
- (d) Give balanced equations :-
- Reaction of ethanoic acid with sodium hydroxide.
 - Sodium hydrogen carbonate with nitric acid.
 - Preparation of ammonia from calcium nitride.
 - Preparation of ethane from sodium propionate.
 - Zinc granules dropped into hydrochloric acid.
- (e) Give scientific reasons :-
- The ionization potential of lithium is least in the second period.
 - Water is said to be a polar covalent molecule.
 - A bottle of conc. sulphuric acid was left open. When used after a few days it was found to be diluted.
 - Fused lead bromide was subjected to electrolysis. Brown gas liberated near the anode.
 - Hydrochloric acid is useful in the jewellery business.
- (f) Give the chemical test that you would perform in your laboratory to distinguish between the following :-
- Nitric acid and sulphuric acid using a laboratory reagent.
 - Carbon dioxide and sulphur dioxide.
 - Two solutions, one containing Fe^{++} ions and another containing Fe^{+++} ions.
 - Copper oxide and manganese dioxide.
 - Potassium nitrate and lead nitrate salts.

- (g) Fill in the blanks by selecting appropriate words from the box :-

Loss	donor	cathode	gain	gram molecular mass
reduction	acceptor	anode	gram atomic mass	oxidation

- The mass of one mole of atoms is called _____.
 - A base is a proton _____.
 - Oxidation is the _____ of electrons by an atom.
 - During electro-refining of metals, the impure metal is made the _____.
 - Sulphur dioxide bleaches coloured matter by the process of _____.
- (h) Define the following terms :-
- Avogadro's law
 - Efflorescence
 - Electrolyte
 - Salt
 - Homologous series

Question 4



- Name the gas 'B'.
- 'C' is a black coloured substance. Name it.
- Give the molecular formula of the compound called 'D'.
- What is the name given to the method used in the preparation of 'D'.
- What is the condition required for the formation of 'A + B'.

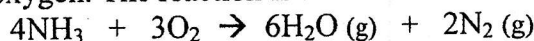
[5]

- (b)
- What type of a salt is sodium chloride?
 - Why is sodium chloride said to be a strong electrolyte?
 - A tiny piece of sodium is put into a beaker of water. To it is added a solution of 'D'. Your observation?
 - A student performs the flame test with sodium chloride. A beautiful coloured flame is seen. What colour was it?
 - Concentrated sulphuric acid creates holes on paper when it falls on the paper. Explain.

[5]

Question 5

- (a) Ammonia burns in oxygen. The reaction is :-



- State the colour of the flame in the above reaction.
- The steam that is formed in the above reaction is condensed and drops of it are put on anhydrous copper sulphate. Write the observation.
- State one main difference between liquor ammonia and liquefied ammonia.
- Name the catalyst used in the manufacture of ammonia by Haber's process.
- When dry ammonia combines with dry carbon dioxide under high pressure and temperature, a substance that is used as a fertilizer is obtained. Write the relevant equation.

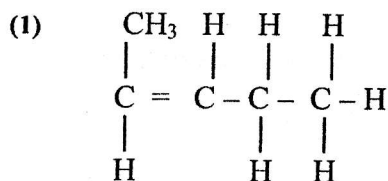
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Section II (40 marks)

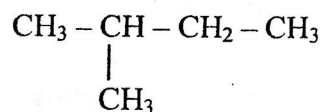
Attempt any 4 questions from this section

Question 2

- (a) (i) What is the molecular formula of Butyne?
(ii) Draw the structure of But-2-yne.
(iii) By means of an equation show preparation of ethyne from calcium carbide.
(iv) Give the IUPAC names of :-



(2)



[5]

- (b) (i) What can you say about the electronic configuration of an element with atomic number 18.
(ii) An element in the first group and third period has formed an ion. Draw its structure. Name this ion according to the modern periodic table.
(iii) Draw the structure of the hydronium ion. Mark the co-ordinate bond.

[5]

Question 3

- (a) Complete this table which refers to the electro-refining of copper :-

<u>Electolyte used</u>	<u>Negative electrode</u>	<u>Positive electrode</u>
(i)	(ii)	(iii)
	<u>Reaction</u>	<u>Reaction</u>
	(iv)	(v)

[5]

- (b) (i) A compound has the following percentage composition :
C = 40 % , H = 6.7 % , O = 53.3 % . Molecular mass is 60 .
Find the molecular formula of this compound. (C = 12, H = 1, O = 16)
(ii) What is the name of the above compound when it is in the solid state.
(The compound has -COOH as a functional group.)
(iii) Find the vapour density of the above compound.

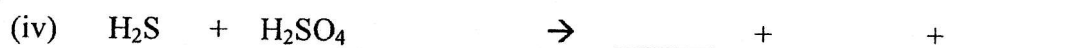
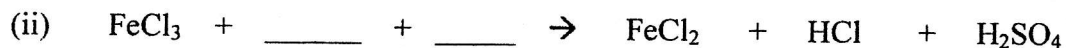
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- (b) (i) What is the mass of water vapour formed at STP when 3.4g of ammonia is burnt in pure oxygen? (N = 14, O = 16, H = 1)
- (ii) How many litres of nitrogen would be produced at STP if ten times the above amount of ammonia were to be burnt in oxygen?
- (iii) How many molecules of ammonia are present in one mole of ammonia?

[5]

Question 6

(a) Complete the equations. Balance it. Rewrite the correct equation.



[5]

(b) Select the correct answer. Write only the correct answer in your answer paper.

- (i) The valency of the first member of group VI A of the periodic table is +2 / -2 / +6
- (ii) Colour of the residue on heating lead carbonate is white / grey / yellow.
- (iii) The electronegative element that is a liquid at room temperature is mercury / bromine / gallium
- (iv) Calamine is an ore of the metal iron / aluminium / zinc.
- (v) The gas used in the artificial ripening of fruits is ethylene / ethane / acetylene.

[5]

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