

GREENLAWNS SCHOOL, WORLI  
FINAL EXAMINATION 2018  
CHEMISTRY

Std: IX  
Date: 15/02/2018

Marks: 80  
Time: 2 hrs

Answers to this paper must be written on the paper provided separately. You will **not** be allowed to write during the first **10** 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.

**Section I** is compulsory. Attempt **any four** questions from **Section II**. The intended marks for questions or parts of questions are given in brackets [ ].

**SECTION I (40 Marks)**

*Attempt all questions from this Section*

**Question 1**

a) Name the following: [5]

- i. Scientist who discovered protons.
- ii. Gas obtained by passing steam over white hot coke.
- iii. An element not having any neutron in its nucleus.
- iv. Chemical responsible for around 80% of ozone depletion.
- v. Colour imparted by potassium ion during flame test.
- vi. Solution which absorbs impurities arsine and phosphine.
- vii. The metalloid present in period 2.
- viii. The gas released when a metallic sulphide reacts with dilute sulphuric acid.
- ix. Renewable energy source generated from biomass and sewage through biological and chemical process.
- x. A sub-atomic particle with mass almost equal to that of proton.

b) Fill in the blanks: [5]

- i. \_\_\_\_\_ refers to the distribution of electrons in different shells.
- ii. The catalyst \_\_\_\_\_ is used in hydrogenation of oil.
- iii. Ammonia turns \_\_\_\_\_ reagent from colourless to pale brown.
- iv. Technical device such as \_\_\_\_\_ can reduce nitrogen oxide emissions from automobiles.
- v. \_\_\_\_\_ arranged elements in increasing order of atomic numbers, forming the basis of the Modern Periodic Table.
- vi. Oxy-hydrogen flame is used for \_\_\_\_\_ of metals.
- vii. \_\_\_\_\_ rays consist of negatively charged particles now called electrons.
- viii. Temporary hard water contains Calcium and Magnesium \_\_\_\_\_ in water.
- ix. \_\_\_\_\_ is a measure of the density of ozone overhead.
- x. Elements of group 3 to 12 are called \_\_\_\_\_ elements.

c) What will you observe when: [5]

- i. Ammonium dichromate is strongly heated in a test tube.
- ii. A naked flame is brought near the apparatus used in the laboratory preparation of hydrogen.
- iii. Hydrogen sulphide gas is passed through acidified potassium dichromate solution.
- iv. Magnesium reacts with dilute hydrochloric acid.
- v. Sodium carbonate reacts with dilute sulphuric acid.

- d) Explain the following terms: [5]
- i. Global warming
  - ii. Mendeleeff's Periodic law
  - iii. Internal combustion engine
  - iv. Newland's law of octaves
  - v. Isotopes
- e) Give balanced equations for the following: [6]
- i. Preparation of hydrogen from a solution of potassium hydroxide.
  - ii. Action of heat on lead nitrate.
  - iii. Softening of permanent hard water.
  - iv. Reducing action of hydrogen.
  - v. Formation of ozone (2 steps)
- f) Give a chemical test to distinguish between the following gases: [4]
- i. Ammonia and hydrogen sulphide
  - ii. Chlorine and hydrogen chloride
  - iii. Nitrogen dioxide and carbon dioxide
  - iv. Oxygen and sulphur dioxide
- g) Give reasons for the following:
- i. Mendeleeff's contributions to the periodic table, laid the foundation for the Modern Periodic Table. [2]
  - ii. Modern atomic theory contradicts Dalton's atomic theory. [2]
  - iii. Lead cannot be used in the preparation of hydrogen using dilute acids. [1]
- h) State two origins of the following pollutants: [5]
- i. Carbon monoxide
  - ii. Suspended particulate matter
  - iii. Oxides of sulphur
  - iv. Methane
  - v. Oxides of nitrogen

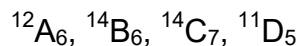
## SECTION II (40 Marks)

*Attempt any four questions from this Section*

### Question 2

- a) Differentiate between the following: [4]
- i. Electrovalent and covalent compounds
  - ii. Group number and period number
  - iii. L.P.G and L.N.G
  - iv. Oxidation and reduction
- b) Give balanced equations for the following:
- i. Use of hydrogen in the manufacture of ammonia. [2]  
(with necessary conditions)
  - ii. Conversion of hydrogen to hydrogen sulphide. [1]

c) Consider the unknown atoms represented below: [1½]



- i. Which has the most protons?
- ii. Which has the most neutrons?
- iii. Which are isotopes of the same element?

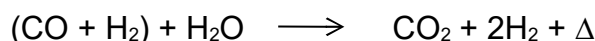
d) State the adverse effect of acid rain on: [1½]

- i. Plants
- ii. Humans
- iii. Building material

### Question 3

a) State the impact of Global Warming. [3]

b) An important step in the manufacture of hydrogen takes place when a mixture of hydrogen and carbon monoxide with steam is passed over iron [III] oxide at 450°C.



- i. State, briefly, how a suitable mixture of hydrogen and carbon monoxide can be obtained. Give the equation. [1]
- ii. How can hydrogen be separated from carbon dioxide and unreacted carbon monoxide? [2]

c) State two defects in Mendeleeff's Periodic table. [2]

d) Identify the following substances: [2]

- i. An alkaline gas 'A' which gives dense white fumes with hydrogen chloride.
- ii. A gas 'B' which has an offensive smell like rotten eggs.
- iii. A gas 'C' which can be used as a bleaching agent.
- iv. A substance 'D' which decomposes with crackling sound and leaves a litharge yellow residue on heating.

### Question 4

a) Give relevant equations for the formation of Nitric Acid in acid rain. [4]

b) Draw atomic diagrams of the following: [2]

- i.  $^{27}\text{Al}_{13}$
- ii.  $^{16}\text{O}_8$

c) Give two sources of hydrogen in: [2]

- i. Free state
- ii. Combined state

d) What is the advantage of using detergents over soap in hard water? [1]

e) Arrange the elements of the third period in order of increasing metallic character. [1]

### Question 5

a) The electronic configuration of an element T is 2, 8, 8, 2. State

- i. The group number and period of T. [1]
- ii. Valence electrons [½]
- iii. Is it a metal or a non-metal? [½]
- iv. Write the formula of its: oxide, chloride, phosphate, hydroxide, sulphate, nitrate. [3]

- b) Hydrogen can be obtained by the electrolysis of acidulated water. [2]  
i. State the reaction taking place at cathode and anode. [2]  
ii. What is the advantage of this process? [1]
- c) How do the following sources give out  $\text{SO}_2$ ? Give equations. [2]  
i. Smelting plants  
ii. Bacterial decomposition of organic matter

**Question 6**

- a) What are the disadvantages of the following energy sources? [3]  
i. Wind energy  
ii. Hydrogen energy  
iii. Biofuels
- b) Give two relevant observations when the following are heated in a hard glass test tube: [2]  
i. Zinc nitrate  
ii. Copper carbonate
- c) Define the following periodic properties: [2]  
i. Ionisation potential  
ii. Electron affinity
- d) State the postulates of Rutherford's Atomic Model. [2]
- e) Name the elements known as eka-aluminium and eka-silicon by Mendeleeff. [1]

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