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SECOND PRELIMINARY EXAMINATION JANUARY 2019
CHEMISTRY

Class:10
Marks: 80
Time: 2hrs
Date: 10/01/19

Answer 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

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Section I is compulsory. Attempt any four questions from section II.
The intended marks for questions or parts of questions are given in brackets [ ].
This paper consists of 7 printed pages

SECTION A (40 Marks)

Question 1

a) **Complete the following statements by selecting the correct alternative from the choices given:** [5]

i) An insoluble salt
A) Lead (II) nitrate
B) Sodium carbonate
C) Ammonium sulphate
D) Barium sulphite

ii) The number of elementary units present in one mole of a substance:
A) Atomic number
B) Atomic mass
C) Avogadro's number
D) Molar volume

iii) If a solution contains Al^{3+}, Zn^{2+} , Mg^{2+} and Hg^{2+} ions which one of them is least likely to be discharged at the cathode:

A) Al^{3+}
B) Mg^{2+}
C) Hg^{2+}
D) Zn^{2+}

iv) The mass of 5.6 litres of Carbon monoxide is:
A) 28.0g
B) 14.0g
C) 7.0g
D) 2..8g

v) The composition of Type metal is:
A) Lead and Tin
B) Lead, Copper and Tin
C) Lead and Antimony
D) Lead, Tin and Antimony

b) Pick the odd one out and state the category of the other three ;(valency and position in activity series cannot be the criteria) [5]

i) Brass, Solder, Bronze, German silver.
ii) Iron(III) chloride, Magnesium chloride, Sodium chloride , Calcium chloride.
iii) Ammonia, Hydrogen chloride, Sulphur dioxide, Carbon dioxide.
iv) C_4H_8, C_7H_{16}, C_8H_{16}, C_6H_{12}
v) Fe^{3+}, Ca^{2+} , Zn^{2+}, Fe^{2+}

c) State your observation for the following: [5]
i) Concentrated Sulphuric acid is poured over sugar.
ii) Potassium nitrate is heated strongly.
iii) A solution of sodium chloride is mixed with Lead nitrate solution and then heated.
iv) Hydrogen chloride is passed over heated Zinc.
v) When Zinc sulphide is heated strongly in presence of sufficient air.

d) i) On adding aqueous ammonia solution to a blue solution of a metal sulphate 'A' , a pale blue precipitate 'B' is formed. 'B' dissolves in excess ammonia solution to form 'C'.

a) Identify 'A' and 'B'. [2]
b) Write balanced chemical reactions for the conversion of 'A' to 'B' and 'B' to 'C' [2]
c) State the colour of the solution 'C'. [1]

e) A compound has the following percentage composition Zn=22.65%, S= 11.15%, O= 61.32% and H= 4.88%.Its relative molecular mass is 287g. Calculate its molecular formula assuming that all the Hydrogen in the compound is present in combination with Oxygen as Water of crystallization. At weight (Zn=65, S=32, O=16, H=1) [5]

f) A) Draw the Structural formula for the following organic compounds: [2]

i) 3,4-Dimethyl pentan-2-ol

ii) 3-Ethyl pent-1-ene

B) Differentiate between the following on basis of the point given in the bracket [3]

i) Methane and Sodium chloride (speed of reaction)

ii) Ethene and Ethyne (Carbon –Carbon bonding)

iii) Potassium chloride and Ammonium chloride (use of Sodium hydroxide)

g) Write balanced equations for the following [5]

i) Combustion of Ethane.

ii) Passage of dry Ammonia over heated Copper (II) oxide.

iii) Conc. Sulphuric acid is poured over crystals of sugar.

iv) Catalytic hydrogenation of Ethene.

v) Burning of Iron pyrite.

h)

A) Samples of O_2, H_2, SO_2 and CO are taken at the same temperature and pressure and contains the same number of molecules X. If the molecules of oxygen occupy V litres. [2]

i) State the volume occupied by 3X molecules of CO

ii) State the law applied.

B) Draw the structure of a positive particle formed when Hydrogen chloride is dissolved in water. State the types of bond formed. [3]

SECTION II

(Attempt any four questions from this section)

Question 2

a) Name the following: [5]

i) A low freezing organic liquid used in thermometers.

ii) An acid used in lead storage batteries

iii) A liquid used as a refrigerant

iv) A neutral gas used as a reducing agent.

v) An alloy used in electrical fuse.

b) Bauxite is the major ore used for the extraction of Aluminium. [5]

i) Name the process.

ii) Name the impurities present in Bauxite.

iii) Write balanced chemical reactions to convert Bauxite to Aluminium oxide.

Question 3

a) In the table given below, the elements of the periodic table with atomic numbers from 3 to 18 are given. Some of the elements are shown by letter but the letters are not the usual symbol of the elements: (the letters do not represent the symbols of the elements). [7]

3	4		6	7	8	9	10
A			B	C	D	E	
11	12	13	14	15	16	17	18
	F			G		H	I

i) Identify

A) the alkaline earth metal.

B) a diatomic neutral gas.

C) the most electronegative element.

D) Element with lowest ionization potential.

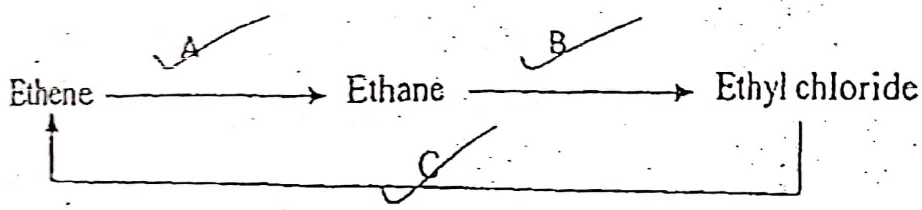
ii) Draw an electron dot diagram for the formation of the molecule formed between B and H.

iii) State the type of bonding in the above formation.

iv) Write ionic equation for formation of ions of A and E.

b)

i) Write balanced chemical equations for the following conversions [3]



Question 4

a) A gas cylinder contains 24×10^{24} molecules of Nitrogen gas. If the Avogadro's number is 6×10^{23} and the relative atomic mass of Nitrogen is 14. Calculate: [2]

i) Mass of Nitrogen in the cylinder.

ii) Volume of Nitrogen in the cylinder.

b) Give a chemical test to differentiate between [2]

i) Nitric acid and Hydrochloric acid.

ii) Zinc carbonate and Zinc sulphate.

c) Write a balanced chemical equation and identify the property exhibited by the acid in the following reactions [3]

i) Concentrated Nitric acid reacts with Carbon

ii) Concentrated Hydrochloric acid heated with Manganese (IV) oxide.

iii) Sulphuric acid is added to Sodium carbonate.

d) State the most appropriate method of preparation for the following salt and write a balanced chemical equation : [3]

i) Iron (II) chloride

ii) Lead (II) sulphate

iii) Zinc sulphide

Question 5

a) State how the following conversions can be carried out by supporting your answer with a balanced chemical equation. [3]

(i) Ethyl chloride to ethyl alcohol

(ii) Ethyl alcohol to ethene.

(iii) Ethyl bromide to ethane.

B) Give reasons for the following: [3]

i) The colour of the electrolyte fades away during its electrolysis of aqueous Copper sulphate using platinum electrodes

ii) Blue vitriol when exposed to atmosphere loses mass.

iii) Metallic character of elements increases down a group.

c) With reference to the industrial preparation of Ammonia answer the following questions: [4]

i) Name the process

ii) Write the balanced chemical equation for the preparation.

iii) State the methods to separate Ammonia from the unreacted reactants.

Question 6

a) Give one word/term for the following statements: [3]

i) The concentration method used for ores based on preferential wetting

ii) The icy mass formed when anhydrous acetic acid is cooled below 16.5°C.

iii) The volume occupied by 22.4l of a gas at STP.

b) A compound gave a following data: C = 58.82%, O = 38.58% and the rest is hydrogen. [5]
Its relative molecular mass is 166. Find its empirical formula and molecular formula.
[C = 12, O = 16, H = 1]

c) Define the terms: [2]

i) Isomers

ii) Water of crystallization

Question 7

a) Give a chemical test for the gas evolved in the following reactions: [4]

i) When water is added to Calcium carbide

ii) Decomposition of Zinc carbonate

iii) Addition of Ethanol to Sodium

iv) Copper suphide reacts with dilute mineral acid.

b) Write balanced Chemical equation for the following conversion: [4]

i) Ethene to Ethanol

ii) Lead (II) nitrate to Lead (II) carbonate

iii) Iron to Iron (III) chloride

iv) Sulphur to Sulphuric acid

c) Calculate the percentage of Iron in Mohr's salt, $(NH_4)SO_4FeSO_4.6H_2O$ [2]

[At.mass Fe=56; S=32; O=16; N=14; H=1]

X