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Index No:

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Supervising Examiner's/Invigilator's initial:

Paper 2 (Chemistry)

Writing Time: 1 $\frac{1}{2}$ Hours

NEW CURRICULUM

Total Marks : 80

READ THE FOLLOWING DIRECTIONS CAREFULLY:

1. Do **not** write for the first **fifteen minutes**. This time is to be spent reading the questions. After having read the questions, you will be given **one and a half hours** to answer all questions.
2. Write the remaining seven digits of your **index number** in the space provided on the **top right hand corner of this cover page only**.
3. In this paper, there are **two** sections: A and B. Section **A** is compulsory. You are expected to attempt **any four** questions from Section **B**.
4. The intended marks for questions or parts of questions, are given in brackets [].
5. Read the directions to each question carefully and write **all** your answers in the space provided in the **question booklet** itself.
6. Remember to write **quickly** but **neatly**.
7. **Do not** remove or tear off any pages from the question booklet.
8. **Do not** draw lines or pictures **on** or **in** the question booklet to beautify it.
9. **Do not** leave the examination hall before you have made sure that you have answered all the questions.

For Chief Marker's and Markers' Use Only

Question Number																		Total	Chief Marker's Signature ↓
Award																			
Markers' initial →																			

SECTION A (40 Marks)

Compulsory: To be attempted by all candidates.

Question 1

(a) *Directions: Each question in this part is followed by four possible choices of answers. Choose the correct answer and write it in the space provided in the question booklet.* [15]

(i) Which of the following is formed by co-ordinate bonding?

- A O₂
- B H₃O
- C NH₃
- D CCl₄

Answer:.....

(ii) Which of the following would weigh the least? [At. Wt. H=1, N=14, O=16]

- A 1 mol of NO₂
- B 1 mole of NO
- C 1 mole of NH₃
- D 1 mole of N₂O

Answer:.....

(iii) A chemical compound which produces a large number of H⁺ ions when dissolved in water is a

- A strong base
- B strong acid
- C weak base
- D weak acid

Answer:.....

(iv) During the electrolysis of molten lead bromide, Pb²⁺ ions migrate to the

- A copper anode.
- B graphite anode.
- C copper cathode.
- D graphite cathode.

Answer:.....

- (v) An acid salt is formed by the
- A complete replacement of ionisable hydrogen atoms.
 - B partial replacement of ionisable hydrogen atoms.
 - C partial replacement of hydroxyl radical.
 - D neutralization of base with an acid.

Answer:.....

- (vi) The element A in the periodic table given below has the tendency to

						A	

- A lose 1 electron.
- B gain 1 electron.
- C lose 7 electrons.
- D gain 7 electrons.

Answer:.....

- (vii) The gas dried by passing it through a drying tower containing quick lime is
- A HCl.
 - B NH₃.
 - C SO₂.
 - D Cl₂.

Answer:.....

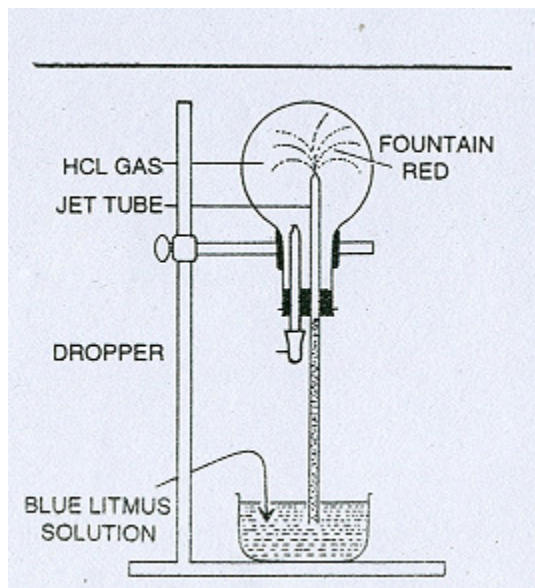
- (viii) Which ones are the advantages of the bleaching effect of sulphur dioxide from the following list?

- I. It can be used to bleach delicate fibres.
- II. It is a powerful bleaching agent.
- III. The bleaching effect is permanent.
- IV. The bleaching effect is temporary.

- A I and II
- B I and III
- C I and IV
- D II and III

Answer:.....

(ix) The diagram given below shows the



- A density of HCl.
- B solubility of HCl.
- C toxic nature of HCl.
- D acidic nature of HCl.

Answer:.....

(x) Which is a neutral oxide?

- A CO
- B NO₂
- C CuO
- D ZnO

Answer:.....

(xi) When a mixture of methane and oxygen in the molar ratio of 9:1 is compressed to a pressure of 120 atm and passed through a copper tube at 200°C the product formed is

- A methyl alcohol.
- B formaldehyde.
- C ethyl alcohol.
- D acetaldehyde.

Answer:.....

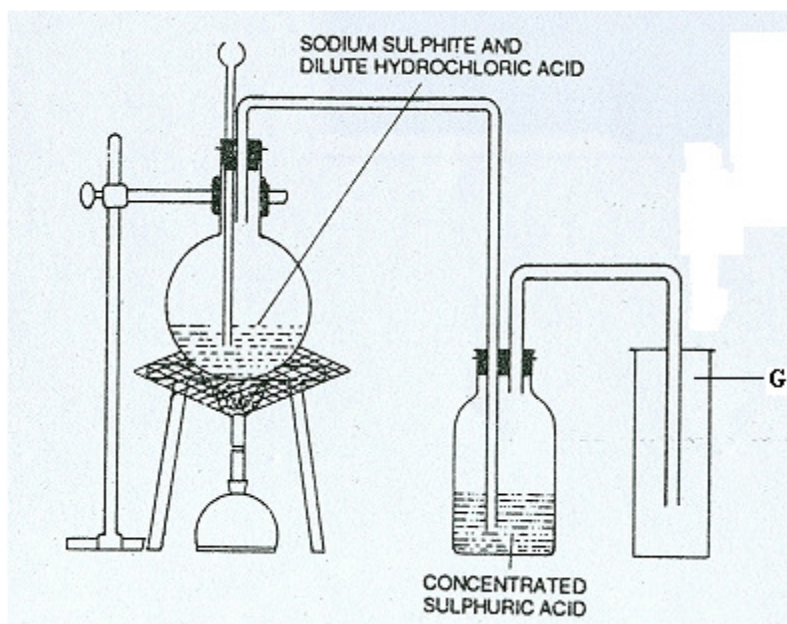
- (xii) The molecular mass of ammonium nitrate (NH_4NO_3) is
[At. Wt. H=1, N=14, O=16]
A 84.
B 80.
C 48.
D 18.

Answer:.....

- (xiii) An element 'E' has an electronic configuration 2, 8, 7. The valency of the element will be
A 17.
B 7.
C 2.
D 1.

Answer:.....

- (xiv) In the diagram given below, the gas 'G' produced is



- A Cl_2 .
B SO_3 .
C SO_2 .
D HCl .

Answer:.....

(xv) The chemical equation for the reduction of zinc oxide is

- A $ZnO + C \rightarrow Zn + CO$
- B $ZnO + CO \rightarrow Zn + CO_2$.
- C $2ZnO + C \rightarrow 2Zn + CO_2$.
- D $2ZnO + 2C \rightarrow 2Zn + 2CO$

Answer:.....

(b) **Match each item under Column A with the most appropriate item in Column B. You must rewrite the correct matching pairs in the space provided.**

[5]

Column A	Column B
(i) Rusting and corrosion	(a) halogen
(ii) Action of alkali on salts	(b) FeCl ₃
(iii) Elements which form salts	(c) platinum
(iv) Blue precipitate	(d) decomposition
(v) Haber's process	(e) Cu(OH) ₂
	(f) refining
	(g) electroplating
	(h) precipitation
	(i) base
	(j) iron

.....

(c) **Fill-in-the-blanks by choosing word/s from the list given below.**

[5]

(oxidising, molecular formula, electron affinity, yellow, non-electrolytes, empirical formula, unsaturated, pink)

- (i) The energy released when an electron is added to a neutral atom is called
- (ii) Nitric acid is a strong agent.
- (iii) is a chemical formula which gives the actual number of atoms in a molecule of a compound.
- (iv) Substances which do not conduct electricity in aqueous or molten state are called

(v) hydrocarbons have double or triple bonds.

(d) **Correct the following statements by changing the underlined words only.**

(i) The numerical value of Avogadro's number is 6.023 × 10³².

(ii) The total number of atoms in one molecule of H₂O is 2.

(iii) The separation of ions which are already present in an ionic compound is known as ionization.

(iv) All the metals are solid except bromine.

(v) The general formula of alkanes is C_nH_{2n}.

(vi) Zinc reacts with hydrochloric acid to give salt and chlorine gas.

(e) **Give reasons for the following.**

[5]

(i) Spurious alcohol though poisonous in nature is largely produced in industries.

(ii) Chlorine atom of atomic number 17 is smaller than a sodium atom of atomic number 11.

(iii) Sulphuric acid is used for the preparation of volatile acids.

(iv) Zinc sulphate solution on addition of aqueous solution of NH_4OH gives a gelatinous white precipitate.

.....
.....

(v) Metals are good conductor of electricity.

.....
.....

(f) (i) When limestone is heated, it decomposes as follows:



What weight of lime can be obtained from 500g of limestone? [2]

(ii) How many moles of water can be produced from 2 moles of hydrogen and 1 mole of oxygen? [1]

.....

(iii) Write the reaction taking place at the cathode, while electroplating a spoon with silver. [1]

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SECTION B (40 Marks)
Attempt any four questions

Question 2

(a) Define the following: [3]

(i) Gay Lussac's Law

.....

(ii) Isomerism

.....

(iii) Gangue

.....

(b) The table given below shows a list of elements and their electronic configurations. Study the table and answer the questions that follow.

Element	Electronic configuration
A	2, 8, 2
B	2, 6
C	2, 8
D	2, 8, 7

(i) Select an element which can form a cation. [1]

.....

(ii) Select an element which is a noble gas. [1]

.....

(iii) State the valency of element B. [1]

.....

(iv) If element A combines with D, what will be the formula of the compound?

.....

(c) A and B are alkalis. On adding A and B to a solution C, a chalky white precipitate is formed. When excess A and B are added, the chalky white precipitate dissolves in A but does not dissolve in B. Identify the substances A, B and C. [3]

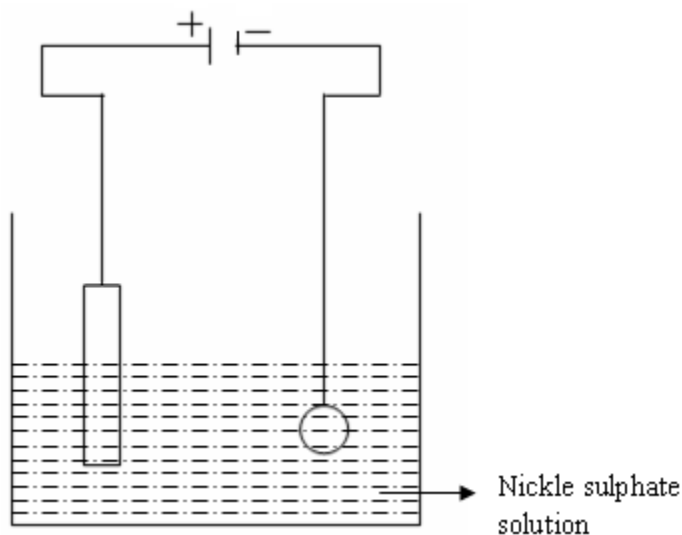
A.....

B.....

C.....

Question 3

(a) The diagram given below shows the electroplating of a copper ring with nickel. Study the diagram and answer the questions that follow.



(i) What will be the anode? [1]

.....

(ii) Where will the Ni^{2+} ions be discharged? [1]

.....

(iii) Write the reaction at the cathode. [1]

.....

(b) Name the following:

(i) A salt solution which gives a green precipitate when sodium hydroxide is added to it. [1]

(ii) A metal which is brittle. [1]

(iii) A gas which bleaches fibres temporarily. [1]

(c) Classify the following hydroxides as soluble or insoluble precipitates in excess of ammonium hydroxide solution. [2]

(Zn(OH)₂, Fe(OH)₂, Cu(OH)₂, Pb(OH)₂)

Soluble precipitate	Insoluble precipitate

(d) What do you observe when:

(i) ammonia reacts with HCl? [1]

(ii) concentrated nitric acid is added to copper? [1]

Question 4

(a) Complete the following statements. [4]

(i) Brass is an alloy of the metal.....

(ii) The size of a sodium atom is than that of magnesium atom.

(iii) The reaction between methane and chlorine is an example of reaction.

(iv) The volume occupied by 1 mole of gas at STP is

(b) Calcium nitrate on heating decomposes according to the following equation:



[At. Wt. Ca = 40, N = 14, O = 16]

Calculate the volume of nitrogen dioxide obtained at STP from 164g of calcium nitrate. [3]

(c) (i) Why are steel utensils preferred over iron utensils? [1]

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(ii) What should be the nature of the substance which is applied on ant bites?
What type of reaction takes place? [2]

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Question 5

- (a) Distinguish between electrovalent and covalent compounds on the basis of their characteristics given in the table below.

[2]

Characteristics	Electrovalent compound	Covalent compound
Solubility		
Melting point and boiling point		

- (b) A compound is found to possess C = 40%, H = 6.7%, O = 53.3%. Its molecular mass is 60.

[At. Wt. C = 12, H = 1, O = 16]

[2]

- (i) Find its empirical formula.

(ii) If the molecular weight of the above compound is 60, find its molecular formula.

(c) An acid converts sugar to a black spongy mass. It is also used as a drying agent.

Name the acid and write its reaction with sugar.

[2]

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(d) Karma found that the bottle of nitric acid in the laboratory had turned yellowish.

(i) What is the reason for this change?

[1]

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.....
.....

(ii) How can you make it colourless?

[1]

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.....

Question 6

(a) When ammonia is bubbled through water, it forms ammonia solution.

(i) What happens to the colour of methyl orange on adding ammonia solution?

[1]

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.....

(ii) State the nature of the solution.

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(b) (i) Define mole. [1]

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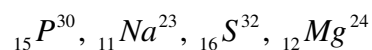
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(ii) The volume occupied by 1 mole of hydrogen is 22.4l at STP. What would be the volume occupied by 1 mole of oxygen at STP? [1]

.....

(iii) Arrange the following in their increasing order of their atomic size. [2]



.....

(c) Write the balanced equation for the:

(i) reaction between zinc and hydrochloric acid. [1]

.....

(ii) formation of slag during the extraction of iron in the blast furnace. [1]

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.....

(iii) reaction between ethane from ethene (state the conditions). [2]

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Question 7

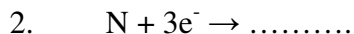
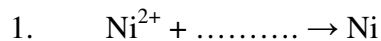
(a) (i) What is oleum? Write its molecular formula. [1]

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(ii) Complete the following reactions.



(iii) With reference to the extraction of iron, write the reaction of haematite (Fe_2O_3) with carbon monoxide. [2]

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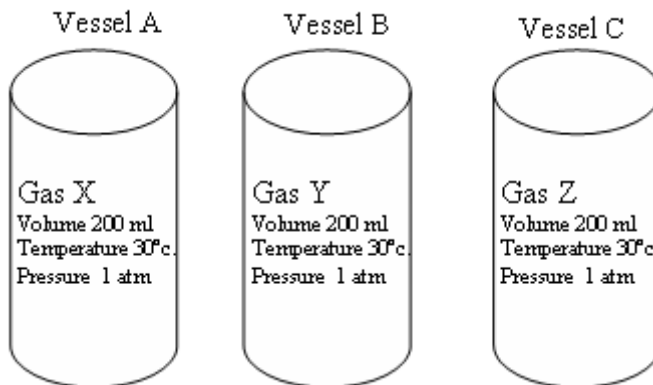
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(b) (i) State the gas law exhibited by the diagram given below. [1]



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(ii) What will happen to the colour of the electrolyte, when CuSO_4 solution is electrolysed using:

1. platinum electrode? [1]

.....

2. copper electrode? [1]

.....

3. State the reaction at the anode. [1]

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- (c) 'Burning of methane in insufficient supply of air can be dangerous to our health. Why? Write the chemical equation for the reaction.

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