

ICSE-modelpaper21-Grade9

*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 is divided into **two** parts, Section I and Section II.
Section I (40 marks) contains short answer questions set from the entire syllabus.
You are required to answer **ALL** questions.
Section II (40 marks) six questions
You are required to answer four Questions from Section II.
The intended marks for questions or parts of questions are given in brackets []*

SECTION I (40 Marks)

Attempt all the questions

Question 1:

- a) Name the following [10]
- A colourless gas that combines with air to form a coloured gas
 - The compound formed when iron is exposed to moist air
 - A liquid that absorbs moisture from air
 - A compound that turns blue when water is added to it
 - An element existing in two crystalline forms
 - A gas prepared in the laboratory by oxidising method
 - A non-poisonous gas in the environment that does not support life?
 - The gas evolved when steam is passed over red-hot iron
 - An allotrope of carbon that is a good conductor of electricity
 - The gas obtained when water is added to magnesium nitride
- b) Complete and balance the following equations and state the types of reactions [5]
- PbO_2 (strongly heated) $\xrightarrow{\Delta}$
 - $\text{MnO}_2 + \text{HCl} \longrightarrow$
 - $\text{Zn} + \text{HCl} \longrightarrow$
 - $\text{KClO}_3 \xrightarrow{\text{MnO}_2}$
 - $\text{Na} + \text{H}_2\text{O} \longrightarrow$
- c) Element X has atomic number 17 [5]
- What is the valence of X
 - Which group does X belong to?
 - Which period does X belong to?
 - Name the formula and the types of compound formed when X combines with
(1) Sodium and (2) itself
- d) Fill in the blanks: [5]
- The first period has _____ elements and is called _____ period.
 - The second period has _____ elements are called the _____ period.
 - The _____ elements are placed on the right hand side of the periodic table.
 - The _____ metals and alkaline _____ metals are placed in the groups IA and group _____ respectively on the left hand side of the periodic table.
 - Noble gases are placed in _____ group of the periodic table

- e) **Give reasons for the following:** [5]
- Wood charcoal floats on water while coke sinks
 - Noble gases do not form compounds readily.
 - It is dangerous to stand in a garage with an automobile engine running
 - Dil HCl is preferred to dilute sulphuric acid for the preparation of CO_2 from marble chips
 - Graphite lubricants are preferred to oil lubricants for heated machine parts

- f) **Answer the following:** [5]
- An atom of an element Y has 4 protons, 5 neutrons and 4 electrons.
- What are the atomic number and the mass number of Y?
 - What will be the symbol of ion of Y if Y loses two electrons
 - How is a proton represented? (Indicate its charge and mass)
 - What is the formula of the oxide of Y?
 - Write the electronic configuration of Y?

- g) **Calculate the following:** [2+3]
- A gas is allowed to expand at a constant temperature from an initial volume of 300ml to a final volume of 1800ml. at the end of the expansion, the pressure of the gas is found to be 1 atmosphere. What was the initial pressure of the gas?
 - A given mass of gas occupies a volume of 200ml at 37°C . To what temperature must the gas be heated to make its final volume 500ml. Assume the pressure of the gas remains constant.

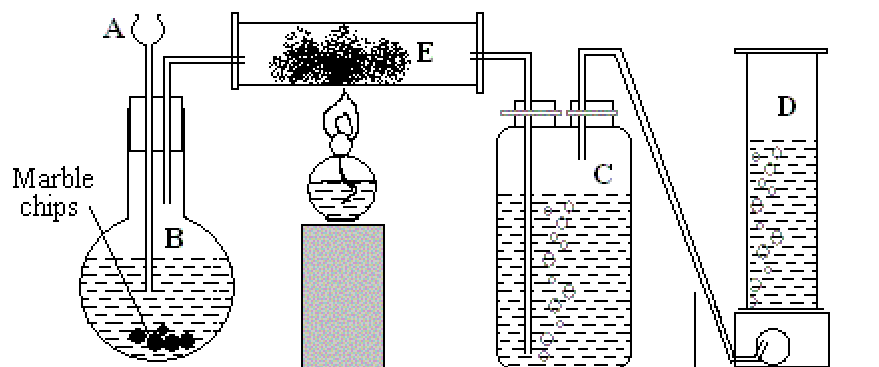
SECTION II

(Attempt any *FOUR* questions from this section)

Question 2:

- Name the gas evolved and give a balanced chemical equation in each of the following cases
 - Solid ammonium nitrate is strongly heated
 - Zn is treated with dilute sulphuric acid [4]
- State the composition of [3]
 - Dry ice
 - Washing soda
 - Baking powder
- Carbon dioxide level is maintained around 0.03% by volume in air. State two processes which maintain this volume. [2]
- Give a balanced chemical equation for the reaction of sulphur with conc sulphuric acid. [1]

Question 3:



a) The diagram shows the laboratory preparation of Carbon monoxide. Study the diagram and answer the following questions.

- i. Identify the chemicals labelled as A through E in the above diagram [2]
 - (1) Identify the liquid passed into marble chips as A
 - (2) B is product produced from this reaction
 - (3) E is an amorphous solid
 - (4) C is the liquid through which the gas is passed to be collected as D
- ii. What is the function of C in purification of the gas produced? [1]
- iii. Write the balanced chemical equation for the laboratory preparation of carbon monoxide using coke. [1]

b) Five atoms are named A to E [4]

Atoms	Mass number	Atomic number
A	35	17
B	37	17
C	23	11
D	40	20
E	16	8

- i. Which of the atoms belong to group II?
 - ii. Which of the atoms has the electronic configuration [2, 8, 1]?
 - iii. Identify the two metallic elements
 - iv. Write the formula of the compound formed between E and C
- c) Write the balanced chemical equation for the change occurring when carbon dioxide is passed through lime water in little amount and then in excess [2]

Question 4:

- a) Give the colour of the flame when the following elements burn in oxygen. Write a balanced chemical equation for each [3]
 - i. Sodium
 - ii. Calcium
 - iii. Potassium
- b) Fill in the blanks with suitable words. [2]
 - i. Metals are _____ donors and they act as _____ agents.
 - ii. Chlorine turns moist _____ litmus paper _____ and then _____
- c) Give the preparation and one application of bone charcoal
- d) Give a reason for the use of nitrogen in the following cases. [2]
 - i. In electric bulb
 - ii. In the tinned food products

- e) Give the formula of the three isotopes of Hydrogen [1]
f) What will be the symbol of the ion that has 20 protons, 23 neutrons and 18 electrons? [1]
g) Though nitrogen gas remains with oxygen gas in the atmosphere, but it hardly reacts, explain why? [1]

Question 5:

- a) Give a sample test which proves that [6]
i. Sulphur is a non-metal
ii. Chlorine is more reactive than iodine
iii. Carbon dioxide contains the element carbon
b) Write down [2]
i. The mass number of the atom having 20 neutrons and 15 protons
ii. The number of neutrons in an atom having atomic number 17 and mass number 37
c) State two differences normally found between the properties of ionic and covalent compounds. [2]

Question 6:

- a) Nitrogen can be prepared in the laboratory by the action of heat on ammonium nitrite. However two chemicals A and B are mixed together and heated to obtain nitrogen gas. [6]
i. Why is ammonium nitrite not used directly to obtain nitrogen?
ii. In what state are the chemicals A and B present and why?
iii. Give equations for the reaction to obtain nitrogen using A and B
b) A gas 'X' at pressure 750mm of mercury and temp 38°C has a volume of 2.57litres. Find the volume of the gas 'X' at STP? [3]
c) Lithium lies in the same group as sodium in the periodic table. What would be the formula of the oxide of Lithium [1]

Question 7:

- a) Elements A, B, C have atomic number 9, 20, 10 respectively. [4]
i. State which one is A metal, Non-metal and Chemically inert
ii. Write down the formula of the compound formed by two of the above elements
b) Give balanced chemical equations with the conditions under which nitrogen reacts with [4]
i. Calcium carbide
ii. Oxygen
iii. Magnesium
iv. Hydrogen
c) Classify the following as covalent and electrovalent compounds [2]
i. Water
ii. Calcium oxide
iii. Ammonia
iv. Methane