Roll No:_____

ARMY BURN HALL COLLEGE FOR BOYS
Model Paper – Class AS Level
SUBJECT: CHEMISTRY

Time allowed: 30 Minutes **Maximum Marks: 25**

INSTRUCTIONS

- Write your Roll Number only on the top right corner.
- Do not write your name or any other information.
- Do not use lead pencil.
- Avoid erasing, cutting, overwriting, etc.
- Any sign, mark, name, etc written on Answer Script to disclose your identity will disqualify you for admission to the College.

ATTEMPT ALL QUESTIONS

SECTION–A (Marks 10)

Q. 1 **Multiple Choice Questions. Each question carries 1 marks.**

(1) In a change of state at constant temperature and pressure:
- energy is released as stronger forces of attraction form between the particles
- the average distance between the particles changes very little.

Which change of state is being described?

A. gas to liquid
B. liquid to gas
C. liquid to solid
D. solid to liquid

(2) X, Y and Z are elements.
X and Y are in the same period of the Periodic Table. Y and Z are in the same group of the Periodic Table.

What are possible electronic configurations for X, Y and Z?

	X	Y	Z
A	2,4	2,7	2,8,4
B	2,4	2,7	2,8,7
C	2,4	2,8,4	2,8,7
D	2,8,4	2,8,7	2,4

DO NOT WRITE ANYTHING HERE

(3) The numbers of electrons, protons and neutrons in four different particles are shown.

particle	electrons	protons	neutrons
1	19	19	20
2	18	19	20
3	20	20	20
4	19	19	22

Which particles are isotopes of the same element?

A. 1 and 2 only B. 1 and 3 only

C. 1 and 4 D. 1, 2 and 3

(4) Some statements about the bonding in magnesium chloride are listed.

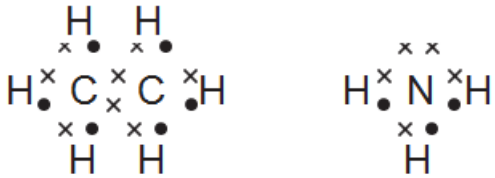
1. Each magnesium atom donates two electrons; each chlorine atom accepts one electron.
2. Chlorine forms an ion with a 2– charge.
3. Magnesium atoms and chlorine atoms share electrons.
4. Magnesium forms an ion with a 2+ charge.

Which statements are correct?

A. 1 and 2 B. 1 and 4

C. 2 and 3 D. 3 and 4

(5) Ethane, C_2H_6, and ammonia, NH_3, are covalent compounds.
The dot-and-cross diagrams of these compounds are shown.



Which statements are correct?

1. A molecule of ethane contains twice as many hydrogen atoms as a molecule of ammonia.
2. An unreacted nitrogen atom has five outer-shell electrons.
3. In a molecule of ethane, the bond between the carbon atoms is formed by sharing two electrons, one from each carbon atom.

A. 1, 2 and 3 B. 1 and 2 only

C. 1 and 3 only D. 2 and 3 only

Q. 2 Fill in the blanks

(1) _____ metal ion shows yellow coloured flame in the flame test.

(2) _____ gas can turn the red litmus blue.

(3) Carbon dioxide produced with effervescence is indication of _____ in the salt analysis.

(4) Yellow ppt indicated the presences of _____ ion in the salt.

(5) No of electron pairs involved in bonding in methyl ethanoate are _____.

SECTION–B

Choose from the following oxides to answer the questions.

Q.3 Group VII includes the elements fluorine, chlorine, bromine and iodine.

(a) Chlorine is a green gas at room temperature and pressure.
State the appearance of iodine at room temperature and pressure. **[1]**

(b) Chlorine reacts with aqueous potassium iodide in a displacement reaction.

$$Cl_2(aq) + 2I^-(aq) \rightarrow 2Cl^-(aq) + I_2(aq)$$

(i) Explain, in terms of electrons, why chlorine is an oxidising agent in this reaction. **[1]**

(ii) State the oxidation number of iodine in I_2. **[1]**

(iii) Describe what is observed during the displacement reaction. **[1]**

(c) The rate of diffusion of fluorine gas is greater than that of chlorine gas under the same conditions of temperature and pressure.

(i) State what is meant by the term diffusion. **[1]**

(ii) Explain why the rate of diffusion of fluorine is greater than that of chlorine under the same conditions. **[1]**

(iii) The rate of diffusion of fluorine increases as the temperature increases.
Suggest why using ideas about kinetic particle theory. **[1]**

Total [7]

Q.4 (a) This question is about the preparation of salts.

Zinc nitrate is a soluble salt.
It is prepared by the reaction of an insoluble carbonate with a dilute acid. The equation for this reaction is shown.

$$ZnCO_3(s) + 2HNO_3(aq) \rightarrow Zn(NO_3)_2(aq) + H_2O(l) + CO_2(g)$$

A sample of 4.50 g of zinc carbonate is added to 50.0 cm^3 of 1.30 mol/dm^3 nitric acid.

(i) Show by calculation that the zinc carbonate is in excess. **[2]**

Q.5 What will be the percentage yield of ammonia if 20g of hydrogen reacts with the 240dm^3 of nitrogen to produce 50dm^3 of ammonia, and what is limiting reagent ?