BABATI DISTRICT COUNCIL

SARAME SECONDARY SCHOOL

CHEMISTRY OPENING TEST, JULY 2025

FORM TWO

INSTRUCTIONS

1. This paper consists of section A, B and C with a total of ten (10) questions.

2. Answer all questions in the space provided.

3. Section A and C carry fifteen (15) Marks each and section B carries seventy (70) Marks.

4. All communication devices and any unauthorized materials are NOT allowed in the examination room.

5. All answers must be in blue or black ink EXCEPT diagrams which must be in pencil.

SECTION A (15 Marks)

Answer **all** questions in this section.

1. For each of the items (i) - (x), choose the correct answer from the given alternatives and write its letter in the box provided.

(i) What are the common activities done in the chemistry laboratory?
A. Exhibitions B. Demonstrations
C. Exercises D. Experiments

(ii) The following substances are constituents of a First Aid Kit in the chemistry laboratory, except:
A. petroleum jelly B. iodine tincture
C. cotton wool D. plaster of paris

(iii) What is the suitable method for separating a mixture of sand and ammonium chloride?
A. Magnetization B. Decantation
C. Sublimation D. Simple distillation

(iv) Which one is an example of liquid solutions?
A. Dental amalgam B. Fresh milk
C. Alloys D. Vinegar

(v) Why do the ships often have blocks of magnesium attached to their hull?
A. To improve appearance of the hull. B. To make the hull stronger.
C. To give sacrificial protection to the hull. D. To weigh down the ship in the water.

(vi) Given a task of preparing hydrogen gas in the laboratory, which complete set of apparatuses will you use?
A. Thistle funnel, flat-bottomed flask, pipette, water trough, beehive stand and a gas jar.
B. Thistle funnel, flat-bottomed flask, delivery tube, water trough, beehive stand and burette.
C. Thistle funnel, flat-bottomed flask, delivery tube, water trough, beehive stand and a gas jar.
D. Thistle funnel, flat-bottomed flask, delivery tube, measuring cylinder, beehive stand and a gas jar.

(vii) What is the role of charcoal in filter elements?
A. To kill germs
B. To sediment impurities
C. To coagulate impurities
D. To trap dust particles

(viii) Why is wind considered a promising source of energy for the future?
A. It does not produce harmful gases.
B. It is easily stored.

C. It is harnessed without chemical reaction.
D. It is a renewable source of energy.

(ix) The relative molecular mass of carbon dioxide (CO_2) is:

(a) 100 (b) 54
(b) 44 (d) 18

(x) Which among the following is the use of chemistry knowledge in agriculture?

(A) application of insecticides and herbicides

(B) preparation of utensils

(C) manufacture of steel wire

(d) Cooking food

i	ii	Iii	iv	v	vi	vii	viii	ix	x

2. Match the item in **List A** with the corresponding responses in **List B** by writing the letter of the correct response beside the item number.

LIST A	**LIST B**
i. Removal of Hydrogen from a substance	A. Oxidation
ii. Removal of oxygen from a substance	B. Reduction
iii. Substance which removes hydrogen from a substance	C. Catalyst
iv. Substance which removes oxygen from a substance	D. Reducing agent
v. Substance that alters the rate of chemical reaction and remains unchanged at the end of reaction	E. Oxidizing agent

LIST A	**i.**	**ii.**	**iii.**	**iv.**	**v**
LIST B					

SECTION B (70 marks)

Answer **all** questions in this section

3.(a) What immediate action will you take when the following accidents happen:

Accident		First aid
(i)	Eye splash by chemicals	
(ii)	Chemical spilled into his/her hand	
(iii)	He/she swallowed chemical accidentally.	

(b) Inesia said that the actions done above are important. Give five reasons for her support.

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4. Study the hypothetical elements given in the following table then answer the questions that follow:

Element	Atomic Number
A	3
C	12
D	16
E	18
F	20

(a) With reason(s), explain which of these elements:

i. Qualifies as a noble gas

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ii. Functions as a halogen

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iii. Serves as an alkali metal

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(b) By giving reason(s), indicate elements which are:

i. placed in the same group

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ii. placed in the same period

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5. (a) (i) What is the name given to the arrangement of the electrons around the nucleus?

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(ii) What is the name of layers in which the electrons are arranged?

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(iii) If each layer in (a)(ii) can hold a maximum number of electrons given by the formula $2n^2$, what does n represent?

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(iv) By using the formula presented in (a) (iii), calculate the number of electrons in the layers K, L, M and N.

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(b) A sample of bromine contains 55% of the isotope with mass number 79; and 45% of the isotope with mass number 81. Calculate the relative atomic mass of bromine.

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6. Oxygen gas is prepared by adding hydrogen peroxide solution drop by drop to manganese (IV) oxide in a flat-bottomed flask. The gas is collected over water.

(a)(i) Draw a labelled diagram to show the preparation and collection of oxygen gas.

(ii) What is the role of manganese (IV) oxide in this reaction?

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(b) (i)We use oxygen at home for cooking, what chemical property makes it suitable for that use?

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(ii) If Leokadia wants to test the gas to confirm whether it is oxygen gas, how would she do?

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7. Which processes can be used to separate or extract each of the following substances?

(i) mixture of iodine and sand …….

(ii) mixture of cooking oil and water ……

(iii) mixture of sodium chloride and water ……..…….

(iv) oil from seed ……

(v) ethanol and water …….

8. (a)What method of preventing rusting is suitable in following iron or steel articles or vehicles:

(i) ships ……..

(ii) bicycle chain ……

(b) What are economic uses water? Give two points.

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9. Besides noble gases, atoms of other elements tend to combine to form molecules or compounds. Sodium has 11 protons and 12 neutrons in its nucleus while chlorine has 17 protons and 18 neutrons in its nucleus.

(a) Draw the arrangements of electrons of sodium and chlorine before and after their combination.

(b) Differentiate between ionic/electrovalent compounds and covalent compounds. Give five points.

Ionic compounds	Covalent compounds

SECTION C (15 marks)

Answer question (10)

10. Sangaiwe villagers are complaining about the government policy of substituting the use of charcoal and firewood with other sources of energy such as biogas and natural gas sold in gas cylinders. You are appointed to educate the villagers to raise their awareness about this policy. Explain in essay form, five negative effects of using charcoal and firewood as a source of energy.

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