

THE 47 COUNTIES C1 SCHOOLS' JOINT NATIONAL SBA ASSESSEMENT

SENIOR SCHOOL ASSESSMENT

TERM 2: MIDTERM ASSESSMENT 2026

GRADE 10 – CHEMISTRY 006 JUNE

Time: 2 Hours

LEARNER'S DETAILS

Name: _____ **School:** _____.

Assessment Number: _____ **Date:** _____.

School Code: _____ **Signature:** _____.

INSTRUCTIONS TO CANDIDATES

1. Write your name in the spaces provided above.
2. Write the name of your school and your stream in the spaces provided.
3. Write your admission number and the date of the assessment in the spaces provided.
4. This paper consists of two sections: A and B.
5. Answer all questions in section A and section B.
6. Answer the questions in English.
7. All answers **MUST** be written in the spaces provided in the paper.
8. Do **NOT** remove any page from this question paper.

FOR OFFICIAL USE ONLY (EXAMINER'S USE)

SECTION	SECTION A	SECTION B	% SCORE	EE1	EE2	ME1	ME2	AE1	AE2	BE1	BE2
SCORE RANGE	30 MARKS	50 MARKS		90-100	75-89	58-74	41-57	31-40	21-30	11-20	1-10
POINTS				8 POINTS	7 POINTS	6 POINTS	5 POINTS	4 POINTS	3 POINTS	2 POINTS	1 POINT
LEARNER'S TOTAL SCORE											

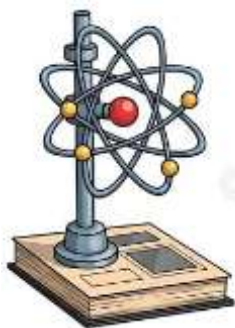
SECTION A (30 MARKS)

Answer ALL questions in this section.

1. A Grade 10 learner in a Kenyan school is revising branches of chemistry during a science club discussion. Name ONE branch of chemistry that deals with carbon compounds.

2. During a community health awareness campaign, a chemist explains safe drug use. State what is meant by the term dosage.
-

3. In a laboratory practical, students observe a substance made of identical particles.



Define the term “atom”.

4. A teacher writes the following element on the board:



Identify the atomic number of sodium.

5. In a classroom discussion, learners compare atomic models.

State ONE main feature of the Rutherford atomic model.

6. A chemistry teacher demonstrates the arrangement of electrons in atoms.

Give the electronic configuration of Neon (Ne).

7. During a revision class, students are asked to classify elements.

Name ONE group of elements that are chemically unreactive.

8. In a hospital pharmacy, drugs are dispensed carefully.

State ONE effect of drug abuse on the human body.

9. A student performs an experiment on chemical bonding.

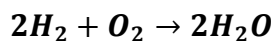
Name the type of bond formed between sodium and chlorine in sodium chloride.

10. In a lab, learners are given two isotopes of chlorine:



Define the term “isotopes”.

11. During an exam discussion, a teacher writes:



State whether this equation is balanced or not.

12. A learner studying the periodic table identifies elements in the same vertical column.

State the name given to vertical columns in the periodic table.

13. During a lab safety lesson, students learn about gases.

Name ONE gas produced during combustion of hydrocarbons that contributes to global warming.

14. A learner analyzes atomic structure.

State the charge of a proton.

15. In a lesson on bonding, students compare structures.

Which bond type allows electricity to pass through molten sodium chloride?

16. A teacher discusses careers in chemistry.

Name ONE career related to chemistry.

17. During a discussion on substance abuse, learners mention bhang.

State ONE effect of bhang on the human brain.

18. In a chemical reaction lesson, students observe a reaction releasing heat.

What type of reaction is this?

19. A learner studies orbitals.

Name the orbital that can hold a maximum of 2 electrons.

20. During a lab session, students study periodic trends.

State how atomic size changes across a period (left to right).

21. A student compares metals and non-metals.

Name ONE property of metals.

22. In a class experiment, a solution conducts electricity.

State what type of compound is present.

23. A learner identifies a molecule with shared electrons.

Name the type of bond formed by sharing electrons.

24. During a revision session, students balance equations.

What is the total number of atoms of oxygen in $2H_2O$?

25. A student studies the noble gases.

State ONE characteristic of noble gases.

26. A teacher demonstrates oxidation.

Define oxidation in terms of oxygen.

27. During a lab test, a student identifies ions.

State the charge of a chloride ion.

28. A learner studies chemical symbols.

Write the chemical symbol for Aluminium.

29. In a classroom debate, learners discuss drug abuse causes.

State ONE cause of substance abuse among youth.

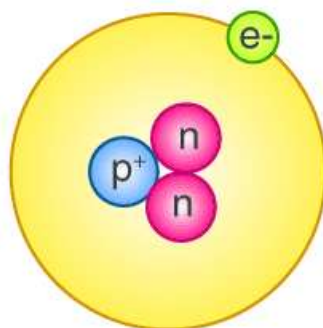
30. A student studies hydrocarbons in daily life.

Name ONE use of hydrocarbons in everyday life.

SECTION B: (50 MARKS)

(Answer ALL questions.)

31. During a laboratory investigation in Lenana Senior School, students analyze the structure of the atom using the following diagram:



(a) Identify the subatomic particles labeled p⁺, n⁰, and e⁻. (3 marks)

p ⁺	n ⁰	e ⁻

(b) Explain the role of the nucleus in an atom. (2 marks)

(c) A sample of chlorine contains isotopes:
75% of mass 35 and 25% of mass 37.

(d) State ONE use of isotopes in medicine. (1 mark)

32. A learner studies the first 20 elements in the periodic table and is given:

Element X: Atomic number = 11

(a) Write the electron arrangement of element X. (2 marks)

(b) Identify the group and period of element X. (2 marks)

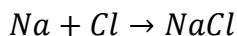
Group	Period

(c) State TWO characteristics of alkali metals. (2 marks)

- i. _____
- ii. _____

(d) Explain how electron arrangement determines chemical reactivity. (2 marks)

(e) A student observes sodium reacting with chlorine:



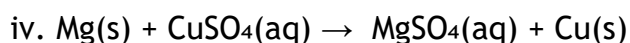
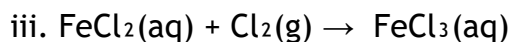
Explain the type of bond formed. (1 mark)

33. During a practical lesson, students compare bonding in diamond and sodium chloride.

(a) State the type of bonding in diamond. (1 mark)

34. A learner performs a reaction between hydrogen and oxygen in the laboratory.

(a) Balance the equation: (2 marks)



(b) Define valency. (1 mark)

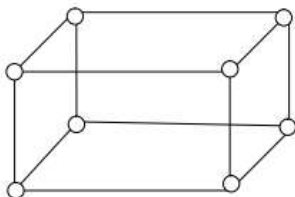
(c) Determine the valency of oxygen in water. (2 marks)

(d) Write the formula for a compound formed between calcium (valency 2) and chlorine (valency 1). (2 marks)

(e) Explain the importance of valency in chemical bonding. (2 marks)

35.

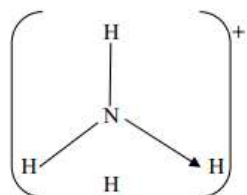
a. The diagram below represents part of the structure of sodium chloride crystal



- ii. The melting and boiling points of sodium chloride are 801°C and 1413°C respectively. Explain why sodium chloride does not conduct electricity at 25°C , but does not at temperatures between 801°C and 1413°C
-
-

- b. Give a reason why ammonia gas is highly soluble in water
-
-

- c. The structure of ammonium ion is shown below;



Name the type of bond represented in the diagram by $\text{N} \rightarrow \text{H}$

- d. Carbon exists in different crystalline forms. Some of these forms were recently discovered in soot and are called fullerenes

- i. What name is given to different crystalline forms of the same element
-

- ii. Fullerenes dissolve in methylbenzene while the other forms of carbon do not. Given that soot is a mixture of fullerenes and other solid forms of carbon, describe how crystals of fullerenes can be obtained from soot
-
-

- iii. The relative molecular mass of one of the fullerenes is 720. What is the molecular mass of this fullerene

36. Explain the following observations:-

i. NaCl allows electric current to pass through them in molten state

ii. Graphite is a non-metal yet it is a conductor of electricity

37. Study the table below and answer the questions that follow:-

Substance		A	B	C	D	E	F
Melting Point (°C)		801	113	-39	5	-101	1356
			119				
Boiling point (°C)		1410	445	457	54	-36	2860
Electrical Conductivity	Solid	Poor	Poor	Good	Poor	Poor	Poor
	Liquid	Good	Poor	Good	Poor	Poor	Poor

Identify with reasons the substances that:

i. Have a metallic structure (1½mk)

ii. Have a molecular structure and exist in the liquid state at room temperature and pressure

iii. Suggest a reason why substance B has two melting points

38. The grid below represents part of the periodic table. The letters do not represent actual symbols of the elements. Study it and answer the questions that follow:-

F			P			G	N	I
	Q		J	K		L	M	
N		X - Z						

- a. What type of bond would you expect in the compound formed between H and F. Explain

b.

- i. Which of the elements J and M will have a greater atomic radius? Explain

- ii. Elements F and N are in the same group of periodic table. How do their atomic radius compare? Explain

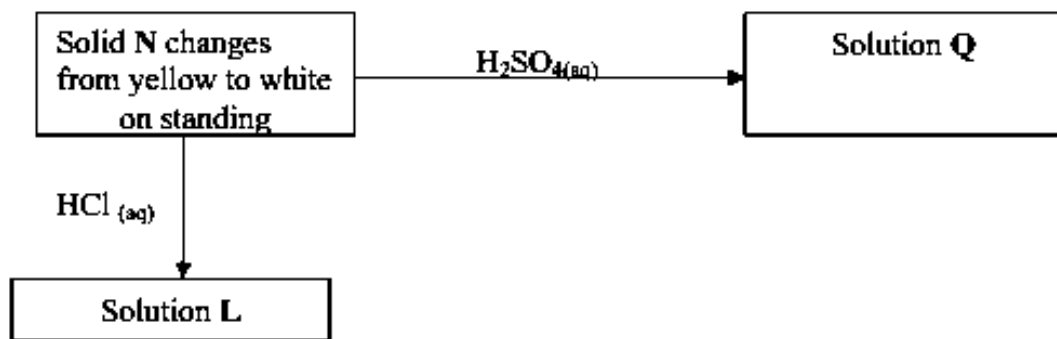
- c. An element W has atomic number 15. Indicate the position it would occupy in the table above

- d. What is the name given to elements X - Z?

f. P and J are termed as metalloids. What does the term metalloid mean?

g. How would you expect the reactivity of H and M to compare? Explain

39. Use the scheme to answer the questions that follow:



a. Identify solid N _____.

b. Write a balanced equation for the formation of Q

c. Write the formula of the complex ion formed when sodium hydroxide is added to solution L in excess

40.

a. Using dots (•) and crosses (x) to represent electrons show bonding in:

ii. S_8 ($S = 16$)

b. Show bonding in Carbon (II) Oxide by use of (—) or (→) to represent bonds.

GRADE 10 INTER C1 SENIOR SCHOOLS END OF YEAR EXAMINATIONS

KENYA CERTIFICATE OF BASIC EDUCATION

SENIOR SCHOOL ASSESSMENT

TERM 3: SECOND ASSESSMENT 2026

GRADE 10 – CHEMISTRY

Time: 2 Hours

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SECTION A (30 MARKS)

1. A learner was investigating substances in the laboratory and recorded the following observations:

Substance P occupied a definite volume but took the shape of its container.

Substance Q had a definite shape and definite volume

b) Identify the state of matter represented by substance Q. _____ (1 mark)

c) State one characteristic of the particles in substance R that enables it to spread throughout the container. (1 mark)

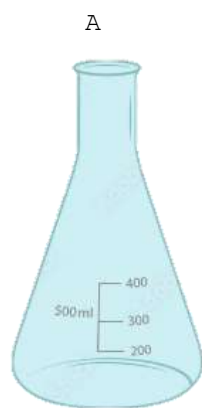
2. An atom of element X has an atomic number of **17** and a mass number of **35**.

a) State the number of protons present in the atom. _____ (1 mark)

b) Calculate the number of neutrons in the atom. _____ (1 mark)

c) Write the electronic arrangement of element X. _____ (1 mark)

3. Study the simplified diagrams below.



a) Identify apparatus **A**. _____ (1 mark)

b) Identify apparatus **B**. _____ (1 mark)

c) State one use of apparatus **C** in the chemistry laboratory. (1 mark)

4. The elements represented by the letters A, B and C have the following electronic arrangements:

☞ A: 2.8.1

☞ B: 2.8.7

☞ C: 2.8.8

a) State the group to which element A belongs. (1 mark)

b) State the group to which element B belongs. (1 mark)

5. The grid below is part of the periodic table. Use it to answer the questions that follow:
(The letters are not the actual symbols).

							A	B
C	D					G		E
F								

Write down the formula of the compound formed between C and A.

- a. Which element has the same electron arrangement as the stable ion of:

(i) F _____

(ii) A _____

- b. Element Q has atomic number 15. Indicate its position on the grid.

- c. Explain how the atomic radii of the following compare:

i. C and F

ii. C and D

- d. Write the type of bond present in a compound formed between D and A.

- e. Compound C and G were completely burned in oxygen.

i. Write down equations to show the combustion of each of the elements.

6.

a. Study the table below and answer the questions that follow.

Particle	Atomic number	Ionic configuration	Formula of oxide	Atomic radii	Ionic radii
P	4			0.110	0.031
Q		2.8.8	QO	0.200	0.099
R		2.8.8	R ₂ O	0.230	0.133
S	17	2.8.8	S ₂ O ₇	0.099	0.181
T	16			0.104	0.231

- Complete the table above
- From the table, choose the most reactive metal. Explain

- Which element is the most electronegative. Explain

- Using dots (.) and crosses (x) to represent electrons, show the bonding in the chloride of Q

- Explain the solubility of element T in water

b.

- Why is aluminium used to make utensils yet it is a reactive metal?

SECTION B: 50 MARKS

Answer ALL questions in this section.

7. The table below gives information about the ions T^+ and Z^{2-}

Ion	T^+	Z^{2-}
Electron arrangement	2.8	2.8.8
Number of neutrons	12	16

- a. How many protons are there in the nucleus of ?

i. Element T? _____

ii. Element Z? _____

- b. Determine the relative formula mass of the compound formed between T and Z

- c. State two conditions under which the compound would conduct electricity

i. _____

ii. _____

8. The number of protons, neutrons and electrons in atoms A to F are given in the table below the letters do not represent the actual symbol of the elements:-

Atoms	Protons	Neutrons	Electrons
A	3	4	2
B	9	10	10
C	12	12	12
D	17	18	17
E	17	20	17
F	18	22	18

- a. Choose from the table the letters that represent:

i. An atom of a metal . _____

ii. A neutral atom of a non-metal _____

iii. An atom of a noble gas . _____

iv. A pair of isotopes _____

9. A learner was given three colourless solutions labelled A, B and C. The learner carried out tests using universal indicator and obtained the following results.

Solution	Universal indicator colour	Approximate pH
A	Red	2
B	Green	7
C	Purple	13

a) Identify solution A as acidic, neutral or alkaline. _____ (1 mark)

b) Identify solution B as acidic, neutral or alkaline. _____ (1 mark)

c) Identify solution C as acidic, neutral or alkaline. _____ (1 mark)

d) Arrange the three solutions in order of increasing acidity. (2 marks)

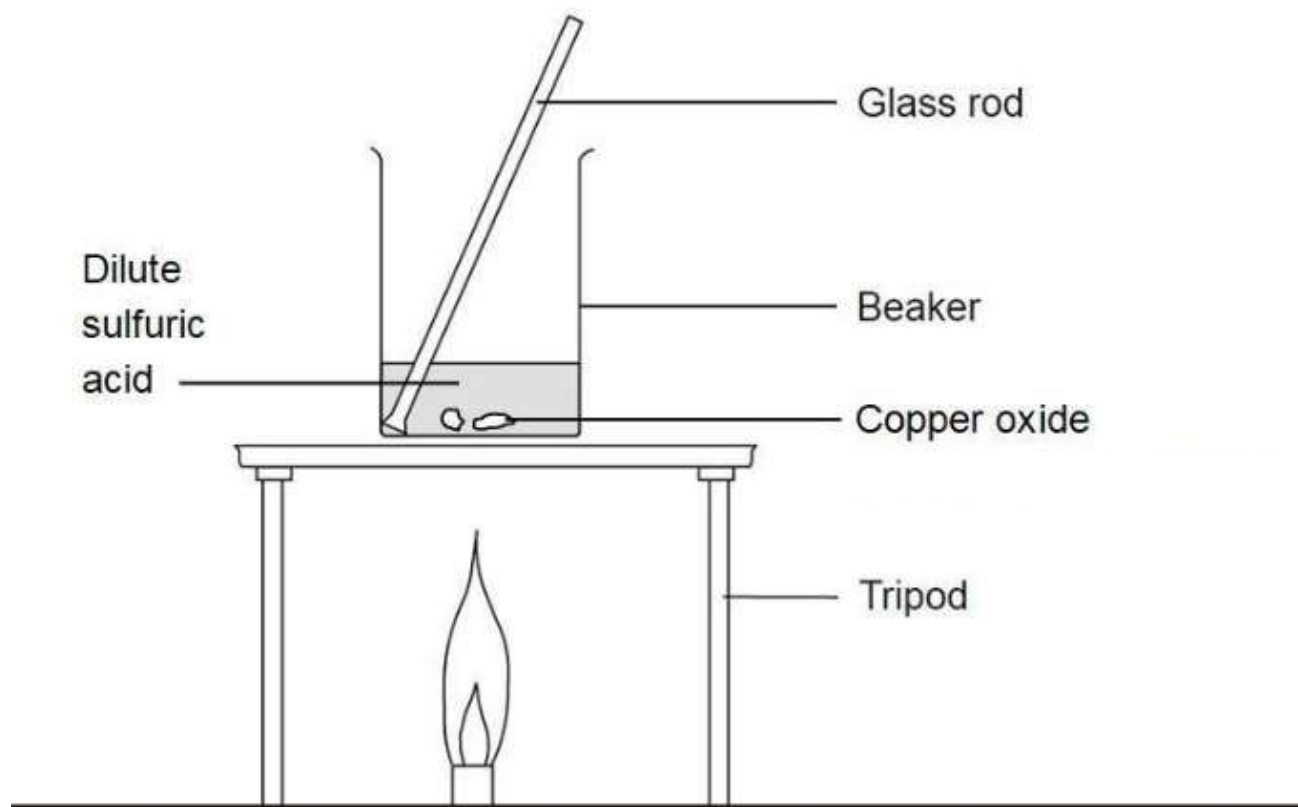
e) State the relationship between pH and acidity of a solution. (2 marks)

f) Name one natural indicator and one laboratory indicator that can be used to test whether a solution is acidic or alkaline. (2 marks)

g) State one use of indicators in everyday life or industry. (1 mark)

10. A learner prepared copper(II) sulfate crystals by reacting copper(II) oxide with dilute sulfuric acid.

The experimental arrangement is represented below.



a) Identify the apparatus used to heat the solution. (1 mark)

b) State the purpose of the glass rod during the experiment. (1 mark)

c) Describe how the learner would obtain pure copper(II) sulfate crystals from the solution after the reaction is complete. (3 marks)

d) Write a balanced chemical equation for the reaction between copper(II) oxide and sulfuric acid. (2 marks)

e) Explain why excess copper(II) oxide is removed before the crystals are obtained. (1 mark)

f) State one safety precaution necessary when carrying out this experiment. (1 mark)

g) Name the process by which the solid crystals are separated from the remaining liquid. (1 mark)

15. The following compounds belong to the same homologous series:

CH₄, C₂H₆, C₃H₈, C₄H₁₀

a) Name the homologous series represented by the compounds. (1 mark)

b) Give the name of the compound with the formula C₂H₆. (1 mark)

c) Give the name of the compound with the formula C₄H₁₀. (1 mark)

d) State the general formula of this homologous series. (2 marks)

e) State two characteristics of a homologous series. (2 marks)

f) Explain why members of a homologous series have similar chemical properties. (1 mark)

g) State one use of methane. (1 mark)

h) State one environmental concern associated with the combustion of hydrocarbons. (1 mark)
