

CHRISTIAN SOCIAL SERVICES COMMISSION (CSSC)
NORTHERN ZONE JOINT EXAMINATIONS SYNDICATE (NZ-JES)



FORM TWO PRE-NATIONAL ASSESSMENT AUGUST, 2026

CHEMISTRY
MARKING SCHEME

1. ANSWERS

i	ii	iii	iv	v	vi	vii	viii	ix	x
D	A	D	D	B	A	B	C	D	A

01@ = 10 marks

2. Answers

LIST A	i	ii	iii	iv	v
LIST B	A	B	F	G	D

01@ = 05 marks

SECTION B (70 marks)

3. 1. Applications of Isotopes

(i) Agriculture

Used to improve crop production and study fertilizer uptake.

Example: Phosphorus-32 is used to trace fertilizer absorption by plants.

(ii) Industrial and Environmental Fields

Used to detect leaks in underground pipes and measure thickness of materials.

Example: Sodium-24 is used to detect leaks in pipelines.

(iii) Medicine

Used for diagnosis and treatment of diseases.

Example: Iodine-131 is used to diagnose and treat thyroid diseases.

(iv) Electricity Production

Radioactive isotopes such as Uranium-235 are used as fuel in nuclear power stations to generate electricity.

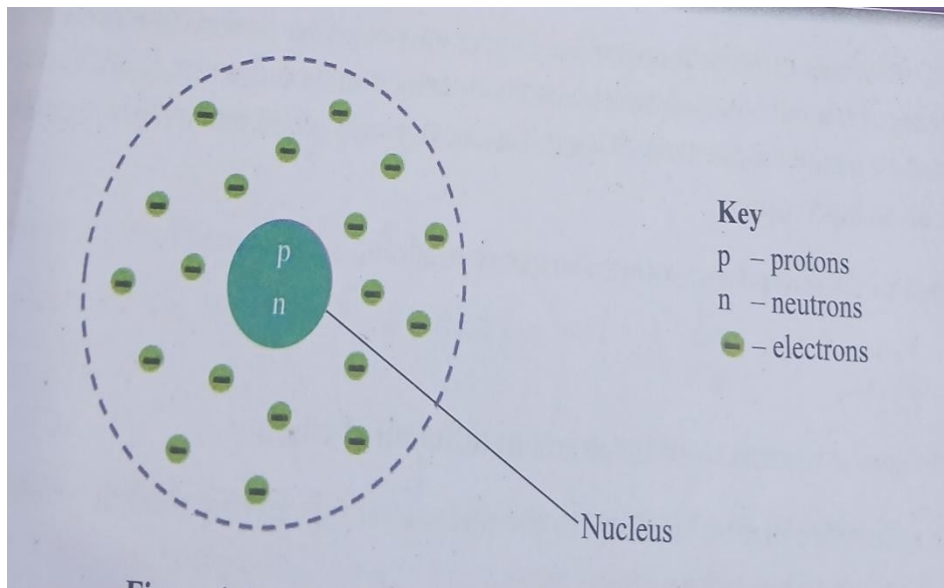
(v) Archaeology

Used to determine the age of ancient fossils and artifacts.

Example: Carbon-14 is used for radiocarbon dating.

02@ = 10 marks

4. (a) Diagram showing subatomic particles



(a) Location of Sub-atomic Particles

02 marks

Protons (p^+) – in the nucleus.

Neutrons (n^0) – in the nucleus.

Electrons (e^-) – move around the nucleus in shells (energy levels).

4(b) Potassium (K)

Given that:

Electrons = 19

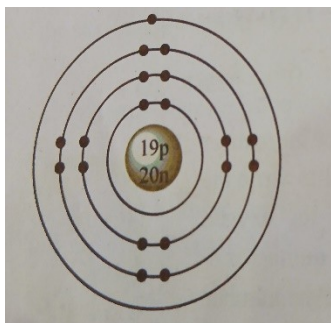
Mass number = 39

(i) Atomic number = 19 02 marks

(ii) Number of neutrons = $39 - 19 = 20$ 02 marks

(iii) Nuclide notation = $^{39}_{19}\text{K}$ 02 marks

(iv) Electronic diagram:



02 marks

@ 02 marks = 10 marks

5.(a) First aid for electric shock victim

- (i) Switch off the electricity supply.
- (ii) Do not touch the victim directly until power is off; use a dry wooden stick or other non-conducting object if needed.
- (iii) Call for medical help or emergency services.
- (iv) Check breathing and pulse; give CPR if trained and necessary.
- (v) Keep the victim warm, calm and monitor until medical help arrives.

(b) Importance of First Aid

- (i) Saves life.
- (ii) Prevents the condition from worsening.
- (iii) Reduces pain and suffering.
- (iv) Promotes faster recovery.
- (v) Prevents infection and further injury.

01 @ = 10 marks

6. (a) Difference between Acid and Base

Acid: A substance that produces hydrogen ions (H^+) in water.

Example: Hydrochloric acid (HCl). 02 marks
while

Base: A substance that produces hydroxide ions (OH^-) in water or accepts hydrogen ions.

Example: Sodium hydroxide (NaOH). 02 marks

(b) Applications of Salts

(i) Food preservation and preparation

Common salt preserves meat and fish.

Salt is used for seasoning food.

(ii) Agricultural practices

Ammonium nitrate is used as a fertilizer.

Calcium salts help improve soil quality.

(iii) Medicine

Oral rehydration salts (ORS) treat dehydration.

Epsom salt is used for some medical treatments. @ 02 marks = 06 marks

7. (a) Physical or chemical change

(i) Solid iodine becoming vapour on heating: Physical change.

(ii) Unripe banana ripening after two weeks: Chemical change. 01@ = 02 marks

(b) Differences between physical change and chemical change

Physical Change

Chemical Change

(i) No new substance is formed.

A new substance is formed.

(ii) Usually reversible.

Usually irreversible.

(iii) Only physical properties change.

Chemical composition changes.

(iv) Small energy change.

Large energy change.

02@ = 08 marks

8.(a) Meaning of terms

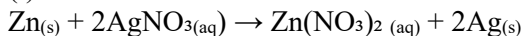
(i) Oxidation: The gain of oxygen or loss of electrons by a substance.

(ii) Reduction: The loss of oxygen or gain of electrons by a substance.

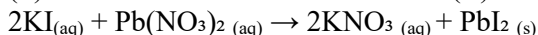
02@ = 04 marks

(b) Balanced chemical equations

(i) Zinc reacts with silver nitrate solution:



(ii) Potassium iodide reacts with lead (II) nitrate solution:



03@ = 06 marks

9.(a) Reasons for using chemical symbols:

(i) They are a universal language for chemists worldwide.

(ii) They make writing chemical equations shorter and easier.

(iii) They reduce confusion and save time in communication.

02@ = 06 marks

(b) IUPAC names for:

(i) FeCl_2 – Iron(II) chloride

(ii) SO_2 – Sulfur dioxide

(iii) NH_3 – Ammonia

(iv) H_2O – Water

01@ = 04 marks

SECTION C (15 MARKS)

10. Application of neutralization reactions in daily life

Neutralization is a reaction between an acid and a base forming salt and water.

First, it is used in medicine where antacids neutralize excess stomach acid and relieve indigestion.

Second, in agriculture, lime is added to acidic soils to improve fertility.

Third, industries use neutralization to treat acidic or alkaline waste before disposal to reduce pollution.

Fourth, neutralization is used to treat insect stings; acidic bee stings are treated with bases like baking soda.

Fifth, it is used in water treatment to adjust pH and make water safe for use.

Sixth, laboratories use neutralization to safely dispose of acids and bases after experiments.

In conclusion, neutralization is very important in health, agriculture, environment, water treatment, and industry.

Introduction 02 marks

Each point (02x6)= 12 marks

Conclusion 01 marks

Total 15 marks