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

FORM TWO PRE – NATIONAL EXAMINATION AUG 2025

CHEMISTRY
MARKING SCHEME

SECTION A

Question 1. **10 MARKS**

Item.	I	Ii	iii	iv	v	vi	vii	viii	ix	X
Ans.	A	C	B	C	D	B	B	B	B	A

Question 2. **5 MARKS**

LIST A	**I**	**Ii**	**iii**	**iv**	**V**
LIST B	**C**	**G**	**D**	**F/E**	**A**

SECTION B

Question 3

(a) Risk of accidents due lacking of supervision or unprepared experiments.

ii. Never quarrel or fight in the laboratory **(1 mark)**

- Physical altercations could knock over equipment or chemicals, causing spills or injuries.

iii. Never throw any solid into the sink or waterways **(1 mark)**

- Solids may cause blockages or contaminate water systems.

iv. Replace the cover after using chemicals **(1 mark)**

- Prevents evaporation, contamination, or accidental spills of chemicals.

v. Never use laboratory apparatus for drinking or storing food **(1 mark)**

- Risk of chemical contamination leading to poisoning or health hazards.

(b) Warning symbols **(5 marks)**

i. Can of petrol **(2.5 marks)**

- Flammable symbol (flame icon). **(1.5 mark)**
- Brief description: Indicates highly flammable substance. **(1 mark)**

ii. Bottle of concentrated sulphuric acid **(2.5 marks)**

- Corrosive symbol (hand/test tube with corrosive effect). **(1.5 mark)**
- Brief description: Indicates substance can cause burns or damage materials. **(1 mark)**

Question 4

(i)Observations in test tubes after three days **(2 marks)**

- Test tube A: Rusting (brown coating on nails). (0.5 mark)
- Test tube B: No rusting (dry conditions). (0.5 mark)
- Test tube D: Rusting (water and oxygen present). (0.5 mark)
- Test tube C: No rusting (no oxygen). (0.5 mark)

(ii). Why water boiled and covered with oil in test tube B? **(2 marks)**

- Boiling removes oxygen; oil prevents oxygen re-entry.

(iii). Function of anhydrous calcium chloride **(2 marks)**

- Absorbs moisture, preventing rusting.

(iv). Conditions for rusting **(2 marks)**

- Presence of water and oxygen.

(v). Function of oil layer **(2 marks)**

- Prevents oxygen from dissolving into water.

Question 5

(a)Instruments and chemicals in first aid kit **(4 marks)**

Instruments (2 marks)

- Bandages: Cover wounds to prevent infection. (1 mark)
- Scissors: Cut dressings or tape. (1 mark)

Chemicals (2 marks)

- Antiseptic solution: Disinfects wounds. (1 mark)
- Hydrogen peroxide: Cleans wounds. (1 mark)

(b) Why water not necessary in first aid kit? **(2 marks)**

- Water is readily available outside the kit. (1 mark)
- Sterile solutions are preferred to avoid contamination. (1 mark)

(c) Examples of laboratory apparatus materials **(4marks)**

i. Porcelain/ ceramic (1 mark): Crucible, evaporating dish.

ii. Plastic (1 mark): Wash bottle, measuring cylinder.

iii. Glass (1 mark): Beaker, test tube.

iv. Iron (1 mark): Tripod stand, tongs.

Question 6

(a)Classify processes **(7 marks)**

- Boiling of water: Physical. (1 mark)
- Decaying of teeth: Chemical. (1 mark)
- Rusting of iron: Chemical. (1 mark)
- Magnetization of iron: Physical. (1 mark)
- Souring of milk: Chemical. (1 mark)
- Grinding of chalk: Physical. (1 mark)

Melting of ice: Physical. (1 mark)

(b) Why some are physical changes? **(3 marks)**

- No new substances formed. (1 mark)
- Reversible by physical means. (1 mark)
- Only state or appearance changes. (1 mark)

Question 7

(a)Chemical formulas **(5 marks)**

- Calcium chloride: $CaCl_2$.
- Calcium hydroxide: $Ca(OH)_2$
- Potassium oxide: K_2O.
- Sodium sulphate: Na_2SO_4.

(b))Oxidation states **(4 marks)**

- $KClO_3$: Cl = +5. (1 mark)
- $ZnCl_2$: Zn = +2. (1 mark)
- Na_3PO_4: P = +5. (1 mark)
- H_2SO_4: S = +6. (1 mark

Question 8

(a)Modifications to Dalton's atomic theory **(5 marks)**

i.Atoms are divisible (subatomic particles exist).

ii.Atoms of same element can have different masses (isotopes).

iii.Atoms combine in whole-number ratios, but not always simple.

iv.Atoms have internal structure (electrons, protons, neutrons).

(b) Element X with mass number 14, 7 neutrons **(5 marks)**

i. Atomic number: 14 - 7 = 7.

ii. Electrons: 7 (equal to atomic number).

iii. Element: Nitrogen (N).

iv. Electronic configuration of X = 2:5

Question 9

(a)Periodic table areas **(5 marks)**

i. Non-metals: Area 1 (top-right).

ii. Oxides dissolve in water: Area 1 (non-metal oxides form acids).
iii. Transition elements: Area 2 (center of periodic table).

iv. Metallic and non-metallic: Area 3 (metalloids).

(b) Atoms X and Y **(5 marks)**

i. Stable: X (noble gas configuration).

ii. Conducts electricity: Y (metal).

iii. More reactive: Y (loses electrons easily).

iv. Elements: X (e.g., Na), Y (e.g., Ne).

SECTION C

QUESTION 10

a) i) Class F **(02mark)**

ii) Wet chemical extinguisher **(02 mark)**

iii) Water, because the burning materials are less dense than water, so when poured will float over water and spread the fire further more. **(02 mark)**

(b) i) Keep a reasonable distance from the fire as it may change direction (such as 3 metres)

ii) Never use a portable extinguisher on people, instead use fire blanket.

iii) Do not test a portable extinguisher to see if it works, it may leak and later fail to work during an emergence.

iv) Do not return a used portable extinguisher to the wall.

v) When fire get out of control, abandon it and notify the nearest firefighting team **(@01=05 marks)**

(c)) i).It is chemical change because new substance is formed.

ii) It is irreversible, and heat or energy may be given out during formation.

(@02= 04 marks)