



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

CHEMISTRY N4

28 July 2026

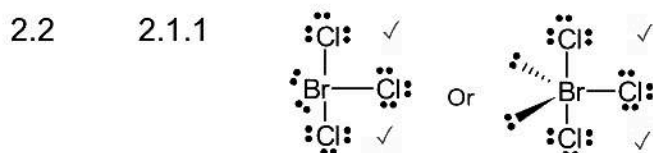
This marking guideline consists of 5 pages.

QUESTION 1: MULTIPLE CHOICE QUESTIONS

- 1.1 B
- 1.2 D
- 1.3 D
- 1.4 A
- 1.5 C
- 1.6 C
- 1.7 A
- 1.8 C
- 1.9 A
- 1.10 B

(10 × 1) [10]

QUESTION 2: BONDING AND CHEMICAL GEOMETRY



2.1.2 Trigonal bipyramidal

2.1.3 T-shape but accept trigonal bipyramidal

2.1.4 No, ✓ there are 5 pairs of electrons around the Br atom. ✓

2.1.5 Yes, ✓ the presence of lone pairs on the central atom does not allow even distribution of charges in the 3-D space. ✓

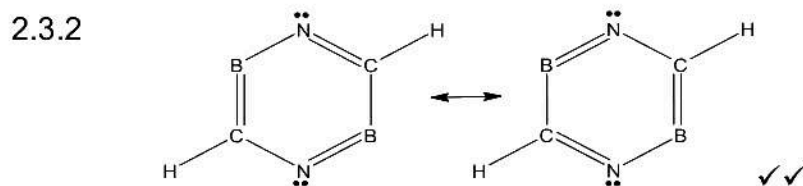
(5 × 2) (10)

- 2.2
- 2.2.1 D
 - 2.2.2 C
 - 2.2.3 A
 - 2.2.4 E
 - 2.2.5 B

(5 × 1) (5)

2.3 2.3.1 No, ✓ C₆H₆ has 30 valence ✓ electrons whereas C₂H₂B₂N₂ has 26 valence electrons. ✓

(3)



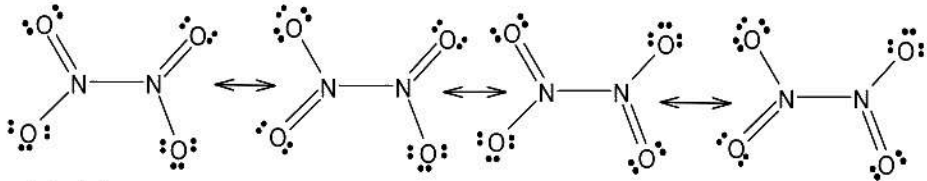
(2)

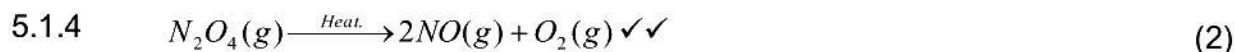
QUESTION 4: DESCRIPTIVE CHEMISTRY OF CARBON

- 4.1 4.1.1 Allotropy defines the ability of an element to exist in more than one physical form having the same physical state. (1)
- 4.1.2 Crystalline: has the characteristics or structure of a crystal. Microscopically they have ordered atomic arrays. They have a well-defined shape. (Accept similar answers.) (1)
- 4.1.3 Amorphous carbon confers ill-defined shape or form. Lack a clear-cut structure. Not crystalline. Atoms and molecules are not organised in a definite lattice pattern. (Accept similar answers.) (1)
- 4.1.4
- Use as fuel (stoves, etc.)
 - Used to produce iron in a blast furnace (or reduce iron oxide to metallic iron)
 - Used to produce water gas
 - Used as a reducing agent in smelting metals (Any 2 × 1) (2)
- 4.1.5 $C(s) + O_2(g) \rightarrow CO_2(g)$ ✓✓ (2)
- 4.1.6 Diamond (1)
- 4.2
- As a solvent in the rubber industry
 - As a cleansing agent in the drycleaning industry
 - As a solvent in the chemical and drug industry
 - Was used in the production of refrigeration fluid
 - Was used as a propellant for aerosol cans
 - Was used as a pesticide
 - Was used as a degreasing agent
 - Was used as part of fire extinguishers
 - Was used as spot remover. Due to its harmfulness, it has been banned and is only used for the first three uses. (Any 3 × 1) (3)

[11]

QUESTION 5: DESCRIPTIVE CHEMISTRY OF NITROGEN

- 5.1 5.1.1
- 
- ✓✓✓✓ (4)
- 5.1.2 Trigonal planar ✓ (1)
- 5.1.3 Nitrogen dioxide ✓ NO₂ ✓ (1)



- 5.2
- Synthesis of ammonia
 - Used as inert atmosphere for air-sensitive reactions
 - Used in fire suppression system
 - Used in light bulb industry
 - Used in stainless steel production
 - Used as a motor car tyre filling agent
 - Carrier gas in chromatography
 - Used in chemical analysis
 - When liquefied, used as a cooling agent
- (Any 3 × 1) (3)
[12]

QUESTION 6: DESCRIPTIVE CHEMISTRY OF OXYGEN

- 6.1
- 6.1.1 $NO(g) + O_3(g) \rightarrow NO_2(g) + O_2(g) \checkmark \checkmark$
- 6.1.2 $Na_2O_2(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + H_2O_2(l) \checkmark \checkmark$
- 6.1.3 $MgO(s) + H_2O(l) \rightarrow Mg(OH)_2(aq) \checkmark \checkmark$
- 6.1.4 $PbS(s) + 2O_3(g) \rightarrow PbSO_4(s) + O_2(g) \checkmark \checkmark$
- 6.1.5 $2Cu(NO_3)_2 \xrightarrow{\text{Heat.}} 2CuO(s) + 4NO_2(g) + O_2(g) \checkmark \checkmark$
- (5 × 2) (10)
- 6.2
- 6.2.1 (c) $Mn_2O_7 \checkmark$
- 6.2.2 (d) $GeO_2 \checkmark$
- (2 × 1) (2)
- 6.3 (a) $SrO \checkmark$ (1)
[13]

QUESTION 7: DESCRIPTIVE CHEMISTRY OF HYDROGEN

- 7.1
- 7.1.1 Tritium $\checkmark$ (1)
- 7.1.2 2 $\checkmark$ (1)
- 7.1.3 2 $\checkmark$ (1)
- 7.1.4 Less reactive $\checkmark$
Its relative mass is higher, thus stronger intermolecular (or van der Waals) forces, hence less reactive. $\checkmark$ (2)
- 7.2 Protium, or ordinary hydrogen. (1)
- 7.3
- 7.3.1 $2T_2(g) + O_2(g) \rightarrow 2T_2O(l) \checkmark \checkmark$
- 7.3.2 $T_2(g) + Cl_2(g) \rightarrow 2TCl(l) \checkmark \checkmark$
- (2 × 2) (4)
[10]

TOTAL: