



Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

PHYSICAL SCIENCES P2
(CHEMISTRY)

COMMON TEST

MARCH 2017

MEMORANDUM

NATIONAL
SENIOR CERTIFICATE

GRADE 11

MARKS: 50

TIME : 1 hour

N.B: This memorandum consists of 4 pages.

SECTION A

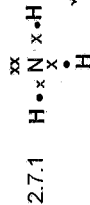
QUESTION 1

- 1.1 B ✓✓ (2)
1.2 C ✓✓ (2)
1.3 D ✓✓ (2)
1.4 C ✓✓ (2) [8]

QUESTION 2

- 2.1.1 **Electronegativity** as a measure of the tendency of an atom in a molecule to attract a bonding pair of electrons. ✓✓ (2)
- 2.1.2 Group IV✓, it is able to form 4 bonding pairs✓ with no lone pairs or has a valency of four (2)
- 2.1.3 $\Delta EN = EN_O - EN_X$
 $1.0 = 3.5 - EN_X$ ✓
 $EN_X = 2.5$ ✓
Therefore X is there Carbon atom✓. (3)
- 2.1.4. Non-polar,✓ the bonds between C and O atoms are polar✓ but the molecule symmetrical shaped ✓/ even distribution of electrons around molecule. ✓ (3)
- 2.2.
2.2.1. $MgCl_2$ ✓ / $NaCl$ ✓ (1)
2.2.2. Ion-dipole ✓ (1)
2.2.3. CH_4 ✓ (1)
2.2.4. H_3O^+ ✓ (1)
2.2.5 CH_4 ✓ (1)
2.2.6 CH_4 ✓ (1)

2.7.



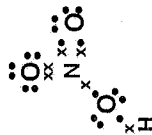
(2)

4.3. Water has hydrogen bonds ✓ between molecules whereas the other hydrides have London forces only. ✓ Hydrogen bonds are stronger than London forces. ✓ Hence more energy needed to separate the water molecules. ✓ (4)

4.4. H₂S ✓, Has the lowest boiling point ✓ (2)

[11]

2.7.2



(3) [21]

TOTAL MARKS: [50]

QUESTION 3

3.1 Average distance between the nuclei of two bonded atoms ✓ (2 or 0) (2)

3.2.1. Accept from 220 - 240 kJ.mol⁻¹ ✓ (1)

3.2.2. Bond energy ✓ (1)

3.2.3 As the distance between nuclei decrease ✓ the attractive forces increases ✓ more energy is required to pull the two atoms apart. ✓ (3)

3.2.4 Repulsive forces ✓ (1)

3.3 HCl ✓



F is a smaller atom than Cl ✓ or F more electronegative than Cl ✓ (2)

[10]

QUESTION 4

4.1. The temperature at which vapour pressure of a substance is equal to the atmospheric pressure ✓ (2 or 0) (2)

4.2 The molar mass increases ✓. Strength of the Van Der Waals forces increases ✓. More energy needed to separate the molecules. ✓ (3)