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education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT

GRADE 11

PHYSICAL SCIENCES P2
JUNE 2024
MARKING GUIDELINES

SEE ACADEMY

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QUESTION 1

1.1 D ✓✓

1.2 B ✓✓

1.3 D ✓✓

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QUESTION 2

2.1 Covalent bond as the sharing of electrons between two atoms to form a molecule. ✓✓ (2)

2.2 2.2.1

✓✓ (2)

2.2.2 ✓✓ (2)

2.3 Electronegativity is a measure of the tendency of an atom in a molecule to attract bonding electrons. ✓✓ (2)
OR
A measure of an atom's attractive force on bonding electrons to form a molecule. ✓✓

2.4 2.4.1 ΔE = 3.0-2.1= 0.9 ✓, polar. ✓ (2)

2.4.2 ΔE = 2.5-2.1= 0.4 ✓,slightly polar/ weak polar. ✓ (2)

2.5 1/ONE. ✓ (1)

2.6 4/FOUR ✓ (1)

2.7.1 Trigonal pyramidal ✓ (1)

2.7.2 Linear ✓ (1)

2.8.1 Covalent dative bond ✓ (1)

2.8.2 Non-polar ✓
- N – H is a polar bond ✓ (ΔEN = 3,0 – 2, = 1)
- NH^+_4 is a tetrahedral ✓
- Charge distribution /molecular geometry / molecule is symmetrical. ✓ (4)

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QUESTION 3

3.1 Bond energy is the energy needed to break one mole of its molecules into separate atoms. ✓✓ (2)

3.2 The shorter the bond the stronger the bond **OR** the longer the bond the weaker the bond. ✓✓ (2)

3.3 A ✓
- F has a smaller atomic size than Cl. ✓
- The bond between H and F atoms is shorter than the bond between H and Cl atoms. ✓
- The bond between H and F atoms is stronger than the bond between H and Cl atoms. ✓ (4)

3.4 92×10^{-12} m ✓ (1)

3.5 427 k·J·mol^{-1} ✓ (1)
[10]

QUESTION 4

4.1 The temperature at which the vapour pressure of a substance equals atmospheric pressure. ✓✓ (2)

4.2 4.2.1 When the boiling point is low the vapour pressure will be higher. ✓✓ (2)

4.2.2 HBr ✓
It has the lowest vapour pressure. ✓ (2)

4.3 Gas ✓ (1)

4.4 4.4.1 80 ^{0}C ✓ (1)

4.4.2 100 ^{0}C ✓ (1)

4.5
- HBr has dipole-dipole forces, H_2O has hydrogen bonds. ✓
- Hydrogen bonds are stronger than the dipole-dipole forces. ✓
- More energy is needed to overcome the intermolecular forces in H_2O than in HBr. ✓

Thus H_2O will have a higher boiling point than HBr ✓ (4)
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TOTAL: 50

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