



**PHYSICAL SCIENCES GRADE 10 JUNE 2016 EXAM MEMO P2**

**MULTIPLE CHOICE QUESTIONS**

- 1.1. B✓✓ (2)  
1.2. C✓✓ (2)  
1.3. C✓✓ (2)  
1.4. D✓✓ (2)  
1.5. C✓✓ (2)  
1.6. B✓✓ (2)  
1.7. B✓✓ (2)  
1.8. D✓✓ (2)  
1.9. C✓✓ (2)  
1.10. D✓✓ (2)

**[20]**

**QUESTION 2**

2.1.

2.1.1. Potassium bromide✓ (1)

2.1.2. 19,35✓✓ (2)

2.1.3. Copper (II) carbonate✓ (1)

Accept: Cuprous carbonate

2.1.4.  $\text{CuCO}_3$ ✓ (1)

2.1.5.  $\text{SO}_2$ ✓ (1)

2.1.6. 16,8(2)✓✓ (2)

2.2.

2.2.1. Atoms with the same number of protons and electrons✓ but different number of neutrons. ✓ (2)

2.2.2. Chemical properties are determined by the electronic structure ✓ of a substance. Isotopes have the same electronic structure ✓ and thus the same chemical properties. (2)

2.2.3.  $Ar = \left(50 \times \frac{43}{100}\right) + \left(52 \times \frac{83,8}{100}\right) + \left(53 \times \frac{9,5}{100}\right) + \left(54 \times \frac{2,4}{100}\right) \checkmark = 52,06 \checkmark$  (2)

2.2.4. Cr/chromium ✓✓ (2)

[16]

### QUESTION 3

- 3.1. 3.1.1. Ductile✓ (1)  
3.1.2. Malleability✓ (1)  
3.3.3. Electrical conductor✓ (1)
- 3.2. 3.2.1. Sugar particles mix with water particles to form a sugar solution and there is no fixed ratio. ✓✓/the boiling point is of the solution is different from either water or sugar/ the sugar can be separated from water. (2)  
3.2.2. Homogeneous ✓ (1)  
3.2.3. Individual particles of sugar are invisible. /There is one single phase/The Solution has the same appearance throughout/The solution is uniform. ✓ (1)  
3.2.4. Physical change✓ (1)
- 3.3. 3.3.1. A method of separating small quantities of substances into its components✓ in order to identify them✓ (using paper and solvent). (2)  
3.3.2. B✓ (1)  
3.2.3. It travels the farthest✓✓ (2)

[14]

### QUESTION 4

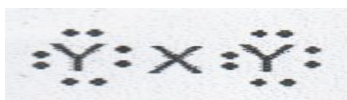
- 4.1. The minimum energy required to remove✓ an outermost electron from an atom/ion (of an electron) in the gaseous phase. ✓ (2)
- 4.2. 4.2.1. Atomic number✓ (1)  
4.2.2. Ionisation energy✓ (1)
- 4.3. Ionisation energy increases from left to right in the period✓ and decreases from top to bottom in the group. ✓ (2)
- 4.4. (Period) 3✓✓ (2)
- 4.5. The valence electrons in period 3 are further away from the nucleus✓ therefore less energy✓ is needed to remove them. Hence ionisation energy is lower. (2)
- 4.6. Helium✓  
Highest Ionisation energy✓✓ (3)

[13]

### QUESTION 5

- 5.1  
5.1.1. Ionic✓ (1)

5.1.2. XY<sub>2</sub>



5.1.3.  $\checkmark\checkmark$  (2)

5.1.4. Electrons are transferred from Magnesium to bromine  $\checkmark\checkmark$

OR bond between a metal and a non-metal  $\checkmark\checkmark$  (2)

5.2.

5.2.1. A shared electron pair  $\checkmark\checkmark$  (2)

5.2.2. CH<sub>4</sub>  $\checkmark\checkmark$  (2)

[11]

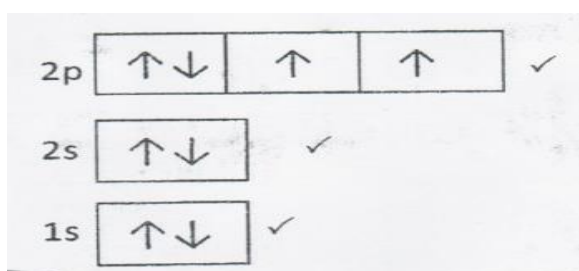
### QUESTION 6

6.1

6.1.1. Six (6)  $\checkmark\checkmark$  (2)

6.1.2.  $1s^2 2s^2 2p^6 3s^2 3p^4$   $\checkmark\checkmark\checkmark$  (3)

6.1.3.



(3)

6.2.

ATOM	<sup>12</sup> C	<sup>13</sup> C	<sup>14</sup> C	<sup>14</sup> N
Number of protons	6 $\checkmark$	6 $\checkmark$	6 $\checkmark$	7 $\checkmark$
Number of electrons	6 $\checkmark$	6 $\checkmark$	6 $\checkmark$	7 $\checkmark$
Number of neutrons	6 $\checkmark$	6 $\checkmark$	8 $\checkmark$	7 $\checkmark$
Number of nucleons	12 $\checkmark$	13 $\checkmark$	14 $\checkmark$	14 $\checkmark$

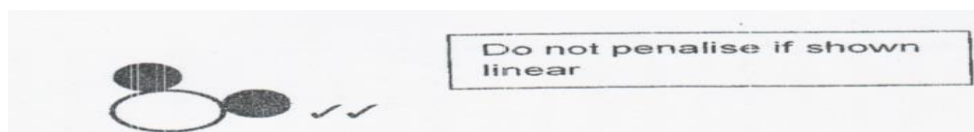
(16)

[24]

### QUESTION 7

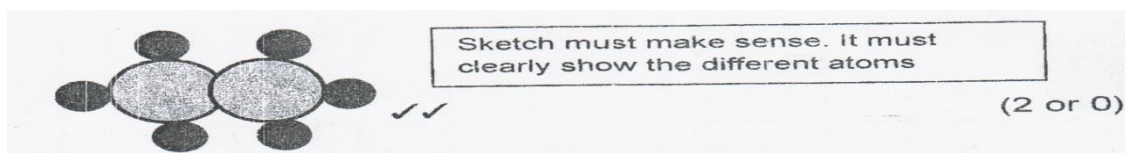
7.1

7.1.1.1



(2)

7.1.1.2.



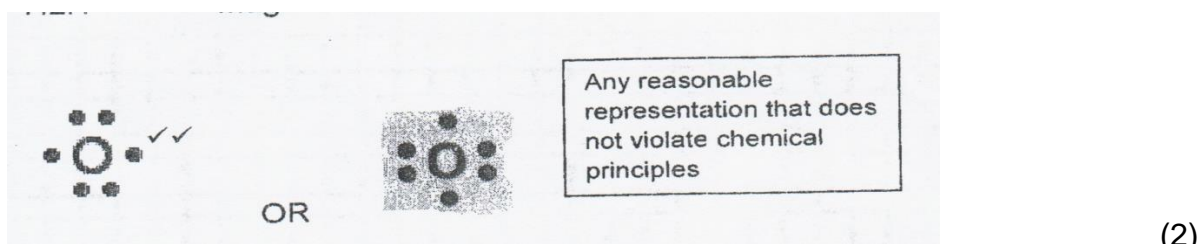
7.1.2.  $\text{CO}_2$  ✓✓ (2)

7.1.3.  $\text{H}_2\text{O}_2$  ✓✓ (2)

7.2

7.2.1. Magnesium Oxide ✓ (1)

7.2.2.



7.2.3. Ionic ✓ (1)

7.3

7.3.1 B Covalent network structure ✓✓ (2)

7.3.2 Intramolecular forces/covalent bond ✓✓ (2)

7.3.3 The **intermolecular forces in red phosphorous is stronger** ✓ than those in white phosphorus and therefore **more energy is required to break the intermolecular forces** in red phosphorus (OR **to melt red phosphorus**) ✓. (2)

7.4.1  $\text{C}_6\text{O}_6\text{H}_{12}$  ✓✓ (2)

7.4.2  $\text{COH}_2$  ✓✓. (2)

[22]

## QUESTION 8

8.1.

8.1.1.  $54\text{ }^\circ\text{C}$  ✓ (1)

8.1.2.  $93\text{ }^\circ\text{C}$  ✓ (1)

8.2.  $\text{NO}$  ✓, Melting point is not  $0\text{ }^\circ\text{C}$ / Boiling point is below  $100\text{ }^\circ\text{C}$  ✓ (2)

8.3.

8.3.1. Liquid ✓ and gas ✓ (2)

- 8.3.2. Solid✓ (1)
- 8.4. Remains constant✓  
 Energy is used to break bond during the phase change✓  
 No energy available to increase the kinetic energy of the particles✓ (3)
- 8.5.
- 8.5.1. Boiling point is the temperature at which liquid phase change its phase/state to gaseous phase✓✓ (2)
- 8.5.2. Freezing point is the temperature at which liquid phase change its phase to solid phase✓✓ (2)
- 8.5.3. Melting point is the temperature at which solid phase change its phase to liquid phase✓✓ (2)
- [16]**

### QUESTION 9

- 9.1.
- 9.1.1. Table salt✓✓ (2)
- 9.1.2.  $\text{Na}_2\text{CO}_3 + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$  ✓✓ (bal) ✓ (4)
- 9.1.3. The mass of the reactants✓ equals the sum of the mass of the products. ✓ (2)
- 9.1.4. Mass (products)=106g✓+2(36,5g)=179g✓  
 Mass (reactants)=58,5g✓+44g✓+18g✓=179g  
 Mass (reactants) = Mass (products) ✓ (6)
- [14]**

**GRAND TOTAL= 150**