

**PROVINCIAL EXAMINATION**  
**JUNE 2022**  
**GRADE 10**  
**MARKING GUIDELINES**

**PHYSICAL SCIENCES (CHEMISTRY) (PAPER 2)**

5 pages

**QUESTION 1: MULTIPLE-CHOICE QUESTIONS**

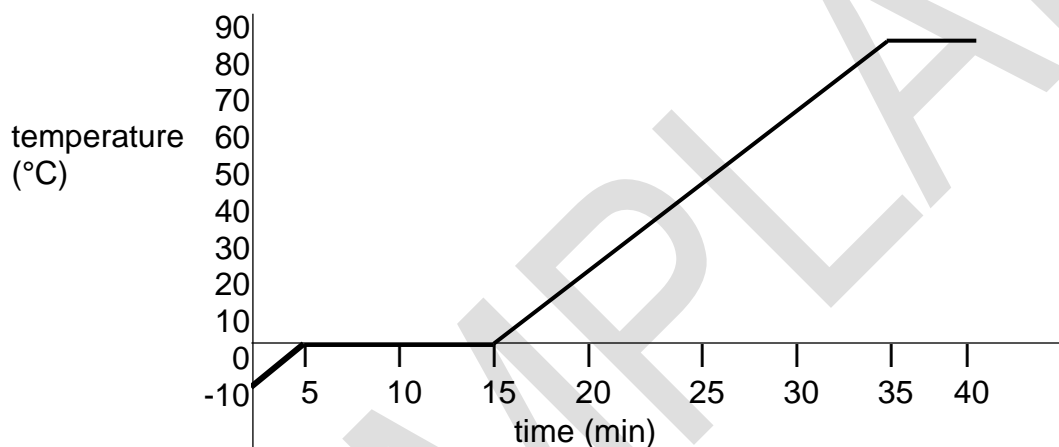
- 1.1 C ✓✓ (2)
- 1.2 B ✓✓ (2)
- 1.3 B ✓✓ (2)
- 1.4 D ✓✓ (2)
- 1.5 A ✓✓ (2)
- [10]**

**QUESTION 2**

- 2.1 A thermal conductor allows heat to pass through easily whereas an electrical conductor allows electric current/electric charges to pass through easily. ✓✓ (2)
- 2.2 2.2.1 Copper ✓ or nickel (1)
- 2.2.2 Nickel ✓ (1)
- 2.2.3 Carbonated water ✓ (1)
- 2.2.4 Glass ✓ or air or Carbon dioxide (1)
- [6]**

## QUESTION 3

- 3.1 The temperature at which the vapour pressure of the substance equals the atmospheric pressure. ✓✓ (2)
- 3.2 Thermometer ✓ (1)
- 3.3 Time ✓ (1)
- 3.4 Graph of temperature against time



- ✓Heading
  - ✓Axes quantity and unit
  - ✓Intervals
  - ✓Plot
  - ✓Best fit line
- (5)

- 3.5 The water is boiling/has reached boiling point/Evaporation. ✓ (1)
- 3.6 The temperature is constant meaning that the liquid is changing into steam. ✓  
The kinetic energy stays constant. ✓ The potential energy is increasing. ✓ (3)

**[13]**

## QUESTION 4

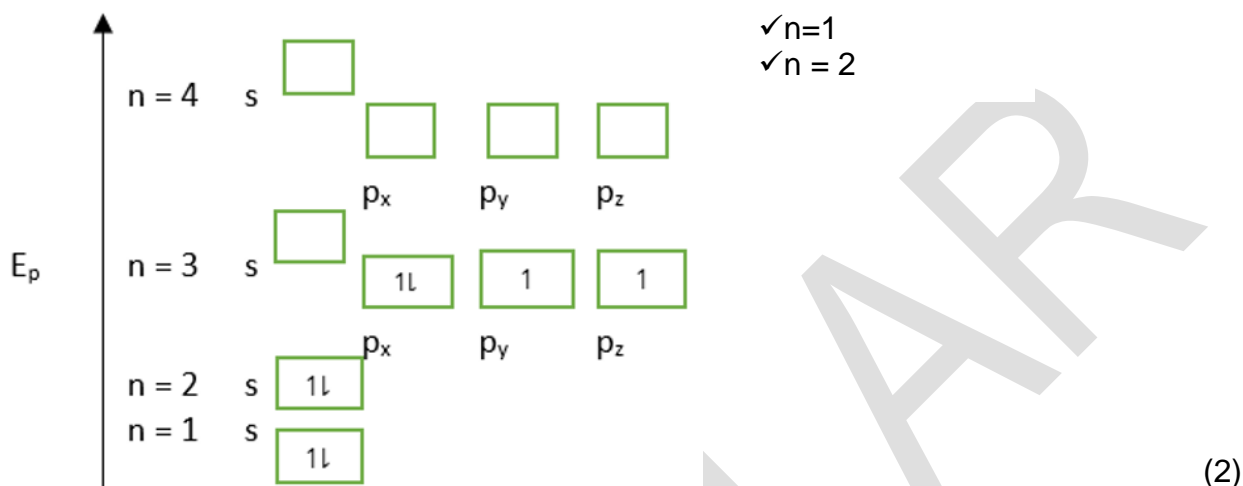
- 4.1 Atoms of the same element having the same number of protons, but different numbers of neutrons. ✓✓ (2)
- 4.2 4.2.1 1 ✓ (1)
- 4.2.2 0 ✓ (1)
- 4.2.3 2 ✓ (1)
- 4.2.4 1 ✓ (1)
- 4.3  $A_r(\text{H}) = \frac{(99,985 \times 1) + (0,015 \times 2) \checkmark}{100 \checkmark} = 1,00015 \checkmark$  (3)

**[9]**

**QUESTION 5**

5.1 Covalent bond ✓, the sharing of electrons between hydrogen and oxygen to form a water molecule. ✓ (2)

5.2



5.3  $1s^2 \checkmark 2s^2 2p^6 \checkmark$  (2)

5.4



✓ 6 valence electrons around each O  
✓ double bond

(2)  
[8]

**QUESTION 6**

6.1 Energy needed per mole to remove an electron(s) from an atom in the gaseous phase. ✓✓ (2)

6.2 He has a higher ionisation energy than Ne ✓ because He is a smaller atom than Ne ✓ or the energy needed to remove an electron from He is more or the protons of He have a greater attraction force on the electrons than on Ne. (2)

[4]

**TOTAL: 50**