KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

PHYSICAL SCIENCES P2

COMMON TEST

MARKING GUIDELINE
JUNE 2023

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MARKS: 75

DURATION: 1,5 hours

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QUESTION 1: MULTIPLE-CHOICE QUESTIONS

1.1 C ✓✓ (2)

1.2 C ✓✓ (2)

1.3 B ✓✓ (2)

1.4 B ✓✓ (2)

1.5 A ✓✓ (2)

[10]

QUESTION 2

2.1 A substance that cannot be separated into simpler components ✓ by physical methods. ✓ (2)

2.2.1 Mixture ✓ (1)

2.2.2 Pure substance ✓ (1)

2.2.3 Mixture ✓ (1)



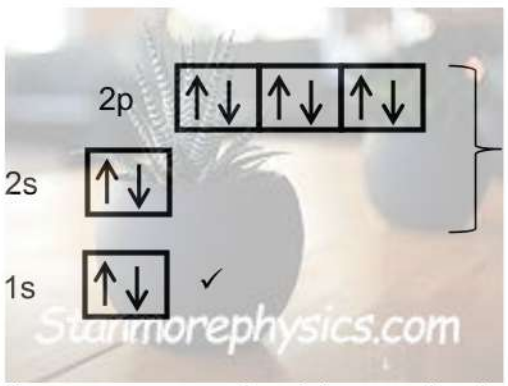
2.3

2.3.1 C ✓ (1)

2.3.2 A ✓ (1)

2.3.3 D ✓ (1)

2.4



✓

✓

The outer energy level is completely full ✓ (3)

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QUESTION 3

3.1

3.1.1 The temperature of a liquid at which its vapour pressure equals the external (atmospheric) pressure. ✓✓ (2)

3.1.2 85°C ✓ (1)

3.1.3 Point X. ✓
Substance B is in the solid phase at Point X and a liquid phase at Point Y. ✓
Particles are closer in the solid phase than liquid. ✓ (3)

3.1.4 Substance A. ✓
Substance A has higher melting and boiling points. ✓ (2)

3.1.5 The average kinetic energy of the particles remains constant. ✓
Forces between particles weaken ✓ and the spaces between particles increase. ✓
The substance is changing phase liquid to gas. ✓ (4)

3.2 Temperature is a measure of the average kinetic energy of the particles in the substance. ✓
When the temperature increases, the particles move faster. ✓
The mercury will expand, resulting in an increase in temperature reading. ✓ (3)

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QUESTION 4

4.1

4.1.1 As we move from left to right across a period, an additional valence electron is added to the outer orbital, and an additional proton is added to the nucleus. ✓ ✓
The force of attraction between the nucleus and outer orbital increases. ✓
The atomic radius will decrease. ✓ (4)

4.1.2 Period 3 elements have additional energy level ✓✓
OR
Period 3 elements have 3 energy levels whereas period 2 elements only have 2. ✓✓ (2)

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4.2

4.2.1 Atoms of the same element having the same number of protons but different numbers of neutrons. ✓✓ (2)

4.2.2 Let the % of Br-79 be x
The % of Br-81 will be 100-x

✓ ✓ ✓

$$79.9 = 79 \times \frac{x}{100} + 81 \times \frac{100-x}{100}$$

x = 55

% Br-79 = 55 % ✓
% Br-81 = 45 % ✓ (5)

4.2.3 a = 35 ✓
b = 35 ✓
c = 44 ✓ (3)

[16]

QUESTION 5 (Start on a new page.)

5.1

5.1.1 A ✓ (1)

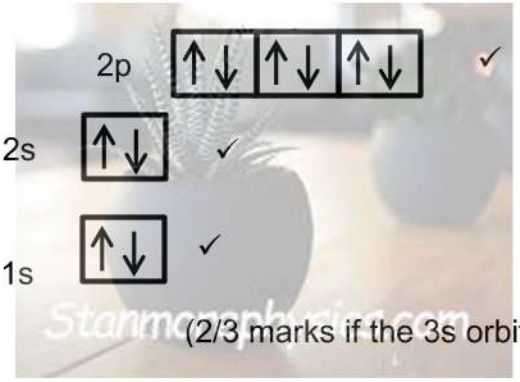
5.1.2 D ✓ (1)

5.1.3 F ✓ (1)

5.1.4 B ✓ (1)

5.2

5.2.1 (3)

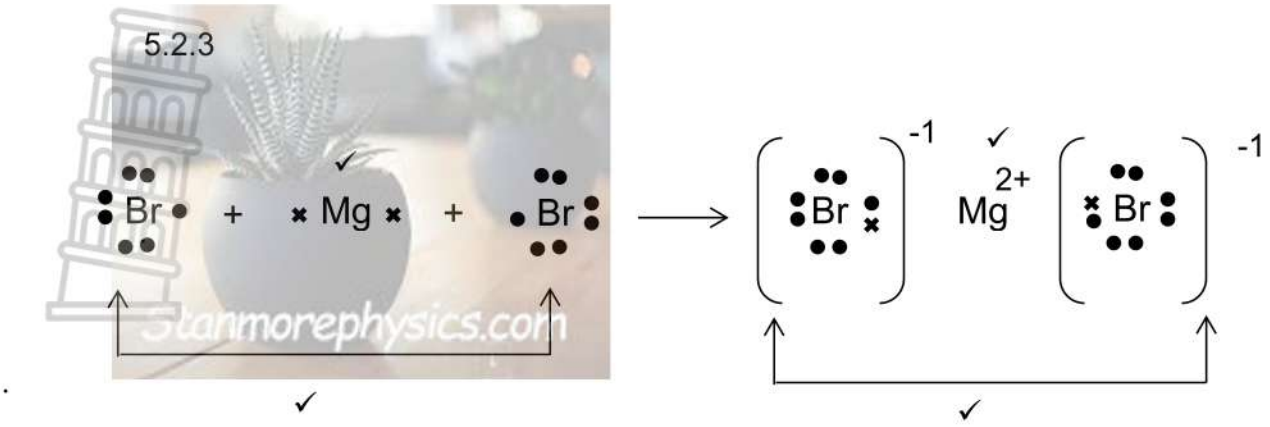


(2/3 marks if the 3s orbital is filled)

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5.2.2 Ionic Bond ✓ (1)

5.2.3 (4)



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QUESTION 6

6.1 Physical Change. ✓
No new substance is formed. ✓ (2)

6.2 $2FeBr_3 + 3H_2SO_4 \rightarrow Fe_2(SO_4)_3 + 6HBr$ LHS ✓
RHS ✓ (2)

6.3 **POSITIVE MARKING FROM QUESTION 6.2**
Mass of Reactants = 2(56 + 3x80) + 3(2x1 + 32 + 4x16) ✓
= 886 g.mol^{-1}
Mass of Products = 56x2 + 3(32+ 4x16) + 6(1 + 80) ✓
= 886 g.mol^{-1}
Mass of reactants is equal to the mass of products. Therefore mass is conserved. ✓ (3)

6.4

6.4.1 $K_2S_2O_3$ ✓✓ (2)

6.4.2 $Mg(OH)_2$ ✓✓ (2)

[11]

TOTAL: 75

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