

Name of the Student: _____

Max. Marks : 16 Marks

Time : 16 Minutes

Q1.

- (a) Write an equation for the reaction that occurs when magnesium is heated in steam.
Describe what you would observe when this reaction occurs.

Equation _____

Observations _____

(3)

- (b) Write an equation for the reaction that occurs when sodium is heated in oxygen.
Describe what you would observe when this reaction occurs.

Equation _____

Observations _____

(3)

(Total 6 marks)

Q2.

- (a) The table below contains data that show a trend in the melting points of some oxides of the Period 3 elements.

Oxide	Sodium oxide	Magnesium oxide	Aluminium oxide	Silicon(IV) oxide	Phosphorus(V) oxide	Sulfur(IV) oxide
Melting point / K		3125	2345	1883	573	

- (i) Use data from the table above to predict an approximate melting point for sodium oxide.

Tick (✓) **one** box.

250 K

☐

500 K

☐

1500 K

☐

3500 K

☐

(1)

- (ii) Explain, in terms of structure and bonding, why sodium oxide has a high melting point.

(2)

- (iii) Use data from the table above to predict a value for the melting point of sulfur(IV) oxide.

Suggest, in terms of structure and bonding, why the melting point of sulfur(IV) oxide is different from that of phosphorus(V) oxide.

Predicted melting point of sulfur(IV) oxide _____

Why the melting point is different from phosphorus(V) oxide _____

(3)

- (b) Write an equation for the reaction of sulfur(IV) oxide with water.

Suggest the pH value of the resulting solution.

Equation

pH value

(2)

- (c) Silicon(IV) oxide is insoluble in water.

Explain, using an equation, why silicon(IV) oxide is classified as an acidic oxide.

(2)

(Total 10 marks)