



CHEMISTRY ONLINE
— **TUITION** —

Phone: +442081445350

www.chemistryonlinetuition.com

Email: asherrana@chemistryonlinetuition.com

CHEMISTRY

INORGANIC CHEMISTRY

Level & Board	AQA (A-LEVEL)
TOPIC:	PROPERTIES OF PERIOD 3 ELEMENTS
PAPER TYPE:	QUESTION PAPER - 2
TOTAL QUESTIONS	10
TOTAL MARKS	33

ChemistryOnlineTuition Ltd reserves the right to take legal action against any individual/ company/organization involved in copyright abuse.

Properties of Period 3 Elements and their Oxides

1. The melting points of some of the oxides formed by Period 3 elements are given in a random order below.

Oxide	A	B	C	D	E
$T_m/^\circ\text{C}$	2852	-73	1610	1275	300

- (a) Using the letters A to E, give two oxides which have simple molecular structures.

Explain your answer.

(2)

- (b) Give a simple chemical test which could be used to show which of the oxides in the table is sodium oxide.

State the observation you would make.

(4)

2. State the structure of, and bonding in, silicon dioxide.
Other than a high melting point, give two physical properties of silicon dioxide that are characteristic of its structure and bonding.

(4)

3. Magnesium oxide is classified as a basic oxide. And phosphorus (V) oxide is classified as an acidic oxide.

(a) Write an equation for a reaction that shows magnesium oxide acting as a base with another reagent.

(2)

(b) Write an equation for phosphorus (V) oxide reaction with sodium hydroxide.

(1)

4. Explain why sodium oxide forms an alkaline solution when it reacts with water.

(2)

5. Which element forms an ionic oxide that reacts with strong alkalis?

- A. Aluminium
- B. Magnesium
- C. Sodium
- D. Sulfur

(1)

6. A chemical company has a waste tank of volume 25 000 dm³. The tank is full of phosphoric acid (H₃PO₄) solution formed by adding some unwanted phosphorus(V) oxide to water in the tank.

A 25.0 cm³ sample of this solution required 21.2 cm³ of 0.500 mol dm⁻³ sodium hydroxide solution for complete reaction.

Calculate the mass, in kg, of phosphorus(V) oxide that must have been added to the water in the waste tank.

(5)

7. Explain why the atomic radii of the elements decrease across Period 3 from sodium to chlorine.

(2)

8. The base calcium oxide can be used to remove sulfur dioxide from flue-gases produced when fossil fuels are burnt in coal-fired power stations.

Calcium oxide is produced when calcium carbonate, is decomposed by heat.

(a) Write an equation for the action of heat on calcium carbonate.

(1)

(b) Identify the product formed when sulfur dioxide reacts with calcium oxide.

(1)

(c) Despite the additional cost, operators of power stations are encouraged to remove the sulfur dioxide from flue-gases. Explain why this may not be environmentally beneficial.

(2)

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

(3)

10. Write an equation for the reaction that occurs when magnesium is heated in steam.

Describe what you would observe when this reaction occurs.

(3)



DR. ASHAR RANA



**CHEMISTRY ONLINE
— TUITION —**

Phone: +442081445350
www.chemistryonlinetuition.com
Email: asherrana@chemistryonlinetuition.com

- Founder & CEO of Chemistry Online Tuition Ltd.
- Tutoring students in UK and worldwide since 2008
- CIE & EDEXCEL Examiner since 2015
- Chemistry, Physics, and Math's Tutor

CONTACT INFORMATION FOR **CHEMISTRY ONLINE TUITION**

- UK Contact: 02081445350
- International Phone/WhatsApp: 00442081445350
- Website: www.chemistryonlinetuition.com
- Email: asherrana@chemistryonlinetuition.com
- Address: 210-Old Brompton Road, London SW5 OBS, UK