



**CHEMISTRY ONLINE**  
— **TUITION** —

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# CHEMISTRY

## INORGANIC CHEMISTRY

Level & Board	AQA (A-LEVEL)
TOPIC:	PERIODICITY
PAPER TYPE:	QUESTION PAPER - 1
TOTAL QUESTIONS	10
TOTAL MARKS	30

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## Periodicity - 1

1. This question is about periodicity.

**(a)** Explain why the atomic radii of the elements decrease across Period 3 from sodium to chlorine.

**(2)**

**(b)** Explain why the melting point of sulfur ( $S_8$ ) is greater than that of phosphorus ( $P_4$ ).

**(2)**

**(c)** Explain why sodium oxide forms an alkaline solution when it reacts with water.

**(2)**

**(d)** Write an ionic equation for the reaction of phosphorus(V) oxide with an excess of sodium hydroxide solution.

**(1)**

I am Sorry !!!!!

2. Which of these elements has the highest second ionisation energy?

- A. Na
- B. Mg
- C. Ne
- D. Ar

(1)

3. This question is about oxides.

(a) Explain, with reference to the bonding in sodium oxide, why this compound reacts with water to form a solution with a pH of 14.

(3)

(b) What general type of oxide forms acidic solutions in water? Give the formula of one such oxide.

(2)

4. Which elements are shown in increasing order of the stated property?

- A. Atomic radius: phosphorus, sulfur, chlorine.
- B. First ionisation energy: sodium, magnesium, aluminium.
- C. Electronegativity: sulfur, phosphorus, silicon.
- D. Melting point: argon, chlorine, sulfur.

(1)

5. Write balanced equations to show the reaction of water with sodium and sodium oxide.

(2)

6. Which element is in the f-block of the Periodic Table?

- A. Palladium
- B. Phosphorus
- C. Platinum
- D. Plutonium

(1)

7. The elements phosphorus, sulfur, chlorine and argon are in the p block of the Periodic Table.

(a) State why these elements are classified as p block elements.

(1)

(b) State the trend in atomic radius from phosphorus to chlorine and explain the trend.

(3)

**(c)** In terms of structure and bonding, explain why sulfur has a higher melting point than phosphorus.

**(3)**

**8.** Which is the correct classification for the element yttrium (Y)?

- A.** s block
- B.** p block
- C.** d block
- D.** f block

**(1)**

**9.** Write equations for the reactions of phosphorus(V) oxide and sulphur dioxide with water.  
In each case predict the approximate pH of a 1M aqueous solution of the product.

**(4)**

**10.** Which is the correct order of melting points of these Period 3 elements?

- A.** phosphorus > sulfur > chlorine > argon
- B.** argon > chlorine > phosphorus > sulfur

- C. sulfur > phosphorus > chlorine > argon
- D. chlorine > phosphorus > sulfur > argon

(1)



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- Founder & CEO of Chemistry Online Tuition Ltd.
- Completed Medicine (M.B.B.S) in 2007
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