

**SMART EXAM RESOURCES**  
**9701 AS CHEMISTRY TOPIC QUESTIONS**  
**TOPIC: ATOMIC STRUCTURE**  
**SUB-TOPIC: DETERMINE ELECTRONIC CONFIGURATION**  
**SET-2**

**1.3.2-Determine-Electronic-Configuration-of-Atoms-and-Ions-Set-2**

1.

*Use of the Data Booklet is relevant to this question.*

The electronic structures of calcium, krypton, phosphorus and an element **X** are shown.

Which electronic structure is that of element **X**?

- A  $1s^2 2s^2 2p^6 3s^2 3p^3$
- B  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$
- C  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^6 4s^2$
- D  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6$

2.

*Use of the Data Booklet is relevant to this question.*

In forming ionic compounds, elements generally form an ion with the electronic structure of a noble gas.

Which ion does **not** have a noble gas electronic structure?

- A  $I^-$                       B  $Rb^+$                       C  $Sn^{2+}$                       D  $Sr^{2+}$

3.

A simple ion  $X^+$  contains eight protons.

What is the electronic configuration of  $X^+$ ?

- A**  $1s^2 \quad 2s^1 \quad 2p^6$   
**B**  $1s^2 \quad 2s^2 \quad 2p^3$   
**C**  $1s^2 \quad 2s^2 \quad 2p^5$   
**D**  $1s^2 \quad 2s^2 \quad 2p^7$

4.

In 1999, researchers working in the USA believed that they had made a new element and that it had the following electronic configuration.



In which Group of the Periodic Table would you expect to find this element?

- A** II                      **B** IV                      **C** VI                      **D** 0

5.

Four electronic configurations are shown below. Three of these configurations belong to atoms of the elements chlorine, sodium and vanadium.

Which electronic configuration belongs to an atom of another element?

- A**  $1s^22s^22p^63s^1$   
**B**  $1s^22s^22p^63s^23p^5$   
**C**  $1s^22s^22p^63s^23p^63d^34s^2$   
**D**  $1s^22s^22p^63s^23p^63d^64s^2$

6.

- 31** An isolated gaseous atom of element X has paired electrons in at least one of its 3d orbitals and has a filled 4s subshell.

What could be the identity of element X?

- 1** iron  
**2** gallium  
**3** copper

The responses **A** to **D** should be selected on the basis of

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>1, 2 and 3</b> are correct	<b>1 and 2</b> only are correct	<b>2 and 3</b> only are correct	<b>1 only</b> is correct

No other combination of statements is used as a correct response.