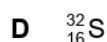
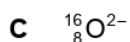
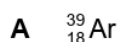


SMART EXAM RESOURCES
9701 AS CHEMISTRY TOPIC QUESTIONS
TOPIC: ATOMIC STRUCTURE
SUB-TOPIC: DETERMINE ELECTRONIC CONFIGURATION
SET-1

1.3.2-Determine-Electronic-Configuration-of-Atoms-and-Ions-Set-1

1.

Which particle has equal numbers of protons and neutrons and an electronic structure of $1s^2 2s^2 2p^6 3s^2 3p^6$?



2.

When chlorine gas is analysed in a mass spectrometer $^{35}\text{Cl}^+$ ions are detected.

Which row is correct?

	number of neutrons in $^{35}\text{Cl}^+$	electronic configuration of $^{35}\text{Cl}^+$
A	17	$1s^2 2s^2 2p^6 3s^2 3p^4$
B	17	$1s^2 2s^2 2p^6 3s^2 3p^6$
C	18	$1s^2 2s^2 2p^6 3s^2 3p^4$
D	18	$1s^2 2s^2 2p^6 3s^2 3p^6$

3.

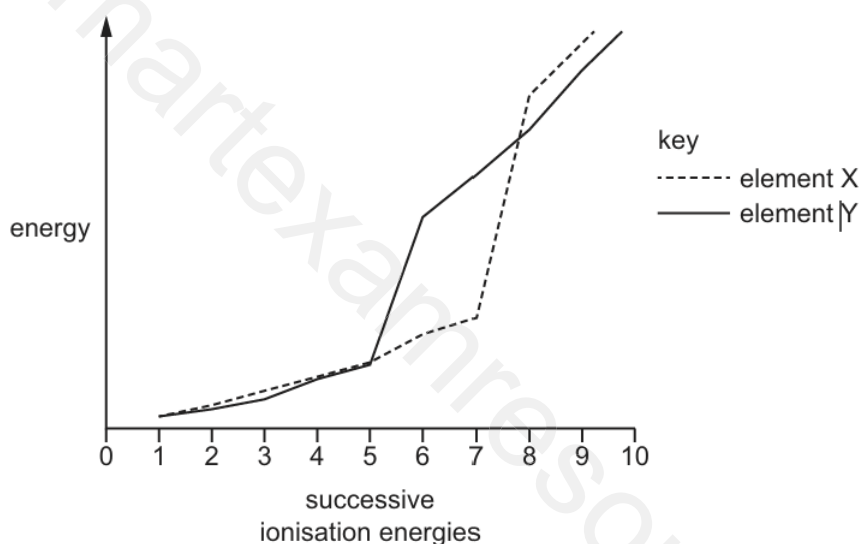
What is the electronic configuration of Mg^{2+} ?

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

4.

The graph shows the successive ionisation energies of element X and element Y.

Both elements are in Period 3.



Which statement is correct?

- A An atom of element X needs one extra electron for a full outer shell; an atom of element Y needs three extra electrons for a full outer shell.
- B An atom of element Y has five electrons in the 3p subshell.
- C Element X has an oxidation number of +7 in most of its compounds.
- D When element X combines with element Y, the bonding is ionic.

5.

What is the electronic configuration of an element with a **second** ionisation energy higher than that of each of its neighbours in the Periodic Table?

- A $1s^2 2s^2 2p^6 3s^2$
- B $1s^2 2s^2 2p^6 3s^2 3p^1$
- C $1s^2 2s^2 2p^6 3s^2 3p^2$
- D $1s^2 2s^2 2p^6 3s^2 3p^3$

6.

Which atom has the same number of electrons as an ammonium ion?

- A** Mg **B** Na **C** Ne **D** O

7.

Gallium nitride, GaN, could revolutionise the design of electric light bulbs because only a small length used as a filament gives excellent light at low cost.

Gallium nitride is an ionic compound containing the Ga^{3+} ion.

What is the electron arrangement of the nitrogen ion in gallium nitride?

- A** $1s^2 2s^2$
B $1s^2 2s^2 2p^3$
C $1s^2 2s^2 2p^4$
D $1s^2 2s^2 2p^6$

8.

The ion X^{2+} has the same electronic configuration as the atom Kr.

What is the electronic configuration of an atom of X?

- A** $[\text{Ar}]4s^2 3d^{10} 4p^6$
B $[\text{Ar}]4s^2 3d^{10} 4p^6 5s^2$
C $[\text{Ar}]4s^2 4d^{10} 4p^6$
D $[\text{Ar}]4s^2 4d^{10} 4p^6 5s^2$

9.

Which row is correct?

	molecule	shape	total number of pairs of electrons in the valence shell of the central atom
A	CO_2	linear	two
B	BF_3	trigonal planar	three
C	NH_3	regular tetrahedral	four
D	PF_5	octahedral	six

10.

A stable ion N_5^+ has been produced by research chemists.

Which structure is most likely to show the electron arrangement of this ion?



11.

What is the electronic configuration of an isolated Ni^{2+} ion?

