CHEMISTRY ONLINE
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CHEMISTRY

MULTIPLE CHOICE - 5

ATOMIC STRUCUTRE

Atomic Structure - 5

1) The radioactive isotope $^{210}_{84}$Po was said to be the agent that poisoned the former Russian security agent L. Alexander in London in November 2006.

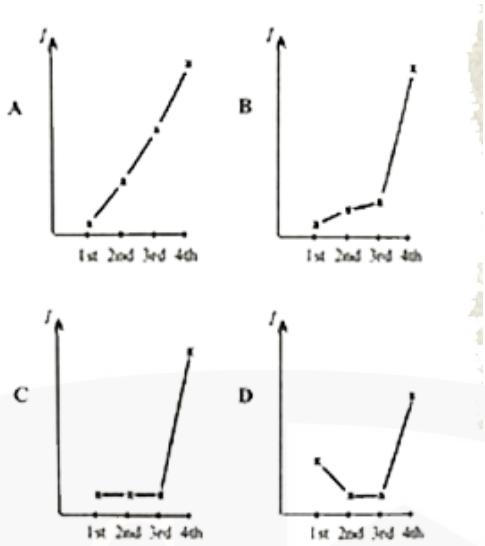
$^{210}_{84}$Po decays to give an element X and emits a high energy $\propto$ –particle (which is a helium nucleus, $^{4}_{2}$He). No other particle is produced. $\propto$ –particle cause irreparable damage to the tissues of internal organs.

$$^{210}_{84}PO \rightarrow {}^{4}_{2}He + X$$

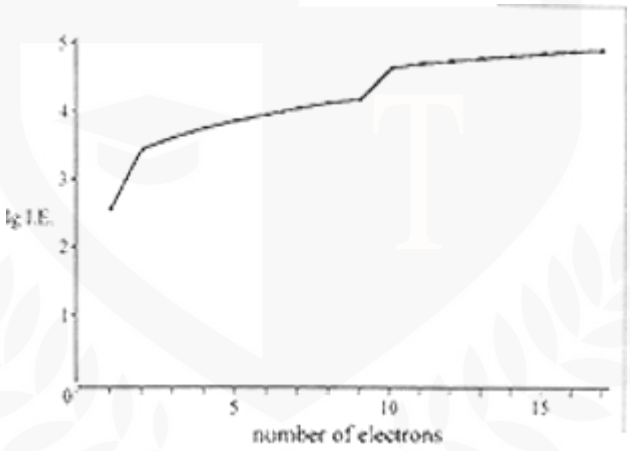
Which row in the table correctly describe the nuclear make-up of $^{210}_{84}$Po and element X?

	$^{210}_{84}$Po	X	
	no. of neutrons	no. of protons	no. of neutrons
A	126	80	122
B	126	82	124
C	210	80	206
D	210	82	208

2) Which of the following diagrams represents the first four ionization energies *I,* of a Group III element?



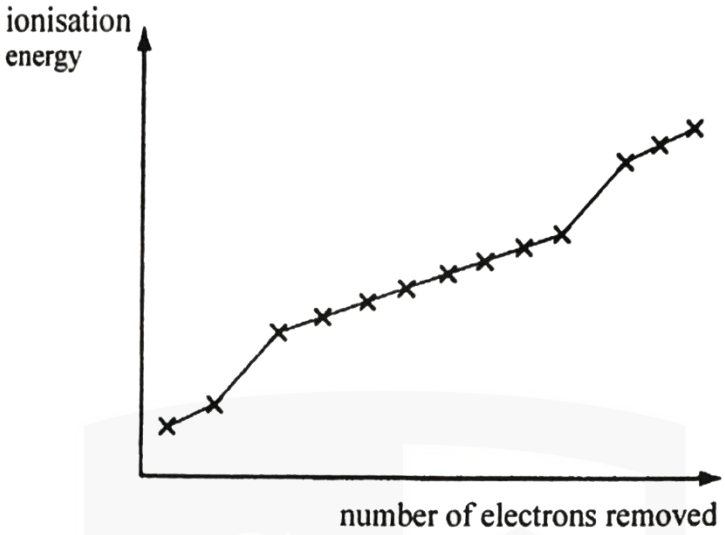
3) *Use of the Data Booklet is relevant to this question.* The graph shows the logarithm, 1g, of the ionisation energies for the outermost seventeen electrons in an atom of an element X.



Which of the following could be X?

(A) argon (B) calcium (C) chlorine (D) potassium

4) The graph shows the first thirteen ionisation energies for element X.



What can be deduced about element X from the graph?

(A) It is a d-block element

(B) It is in Group II of the periodic Table

(C) It is Group of Periodic Table.

(D) It is in the second period (Li to Ne) of the Periodic Table.

5) A species **Z** has the following electronic configuration.

What colud **Z** be?

(1) Cl^+

(2) s atom

(3) Ar^{2-} ion

6) Which statements about atomic particles are correct?

(1) The nucleon number of an element is the number of neutrons in one atom of the element.

(2) The proton number of an element is the number of protons in one atom of the element

(3) The size of the charge on an electron is the same as that on a proton

7) The isotope cobalt-60 ($^{60}_{27}Co$) is used to destroy cancer cells in the human body.

Which statements about an atom of cobalt-60 are correct?

(1) It contains 33 neutrons.

(2) Its nucleus has a relative charge of 27+.

(3) It has a different number of neutrons from the atoms of other isotopes of cobalt.

8) Which of the following statements about the two isotopes 15P and 16S are correct?

(1) The phosphorus atom has more neutrons than the sulfur atom.

(2) If a neutron is added to the nucleus of $1^2{}_5P$, $1^2{}_6S$ is produced.

(3) Both contain 32 electrons.

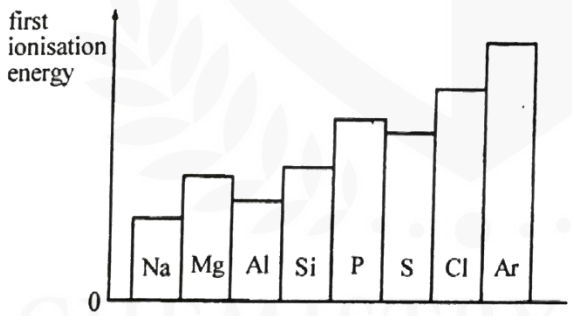
9) Which of the following statements about the s, p and d orbitals of principal quantum numbers 1, 2 and 3 are true?

(1) Each s orbital can contain a maximum of two electrons.

(2) A series of transition elements arises from the filling of d orbitals.

(3) A p orbital has a higher energy than the s orbital of the same principal quantum number.

10) The first ionisation energies of elements in the third period are shown.



Which factors explain why the value of the first ionisation energy of sulfur is lower than that of phosphorus?

(1) repulsion between the pair of 3p electrons

(2) greater shielding by inner electrons

(3) increase of principal quantum number

11) Gaseous particle X has a proton (atomic) number *n* and a charge of +1.

Gaseous particle Y has a proton (atomic) number of *(n* + 1) and is isoelectronic with (has the same number of electrons as) X.

Which of the following statements corrrectly describe X and Y?

(1) X has a larger radius than Y.

(2) X requires more energy than Y when a further electron is removed from each particle.

(3) X releases more energy than Y when an electron is added to each particle.

I am Sorry !!!!!

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