Smart Edu Hub [.in/.com]

CAIE A LEVEL Chemistry Topic Questions / 9701

1.1.1-Atomic-Structure-Basics-Set-1-qp

Total Questions: 10

Note:

- For questions with answer choices as statements 1, 2 and 3, follow these instructions for selecting options A/B/C/D:
- A= 1, 2 and 3 are correct
- B=1 and 2 only are correct
- C=2 and 3 only are correct
- D=1 only is correct

Questions

Question 1:

What number of protons, neutrons and electrons are present in the ion $^{54}Fe^{3+}$?

	protons	neutrons	electrons
A	26	28	23
B	26	28	29
C	29	25	23
D	29	25	26

Question 2:

The ion Y^{3-} contains 18 electrons and has a mass number of 31.

How many protons and neutrons does Y^{3-} contain?

	protons	neutrons
A	15	16
B	15	18
C	18	13
D	21	10

Questions (Continued)

Question 3:

The table shows the numbers of protons, neutrons and electrons in four different particles, W, X, Y, and Z.

	number of protons	number of neutrons	number of electrons
W	32	40	32
X	32	40	34
Y	32	42	32
Z	34	40	34

Which pair represents the atoms of two isotopes of the same element?

A W and Y **B** W and Z **C** X and Y **D** X and Z

Question 4:

In which option do all three particles have the same electronic configuration **and** the same number of neutrons?

A $^{15}N^{3-}$ $^{16}O^{2-}$ $^{19}F^{-}$

B $^{18}O^{2-}$ $^{19}F^{-}$ ^{20}Ne

C $^{19}F^{-}$ ^{20}Ne $^{23}Na^{+}$

D ^{22}Ne ^{23}Na $^{24}Mg^{2+}$

Question 5:

In which species are the numbers of protons, neutrons and electrons **all** different?

A $^{19}_{9}F^{-}$ **B** $^{23}_{11}Na^{+}$ **C** $^{31}_{15}P$ **D** $^{32}_{16}S^{2-}$

Question 6:

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

A $^{39}_{18}Ar$ **B** $^{40}_{20}Ca^{2+}$ **C** $^{16}_{8}O^{2-}$ **D** $^{32}_{16}S$

Questions (Continued)

Question 7:

Element X has six more protons than element Y.

Which statement **must** be correct?

A Atoms of element Y are smaller than atoms of element X.

B Element X has a full shell of electrons.

C Element X and element Y are in the same group.

D Element X and element Y are in the same period.

Question 8:

Use of the Data Booklet is relevant to this question.

The isotope ^{99}Tc is radioactive and has been found in lobsters and seaweed adjacent to nuclear fuel reprocessing plants.

Which statements are correct about an atom of ^{99}Tc?

1 It has 13 more neutrons than protons.

2 It has 43 protons.

3 It has 99 nucleons.

Question 9:

A particular atom of germanium, Ge, has a nucleon number of 70.

Which statements about a $^{70}_{32}Ge$ atom are correct?

1 It has the same number of electrons as a $^{79}_{34}Se^{2+}$ ion.

2 It has the same number of neutrons as an atom of $^{68}_{30}Zn$.

3 It has half as many protons as an atom of $^{160}_{64}Gd$.

Questions (Continued)

Question 10:

Which statements about an atom of ^{99}Tc are correct?

1 It has 13 fewer protons than neutrons.

2 It forms $^{99}Tc^{2+}$ which has 45 electrons.

3 It has 56 nucleons.