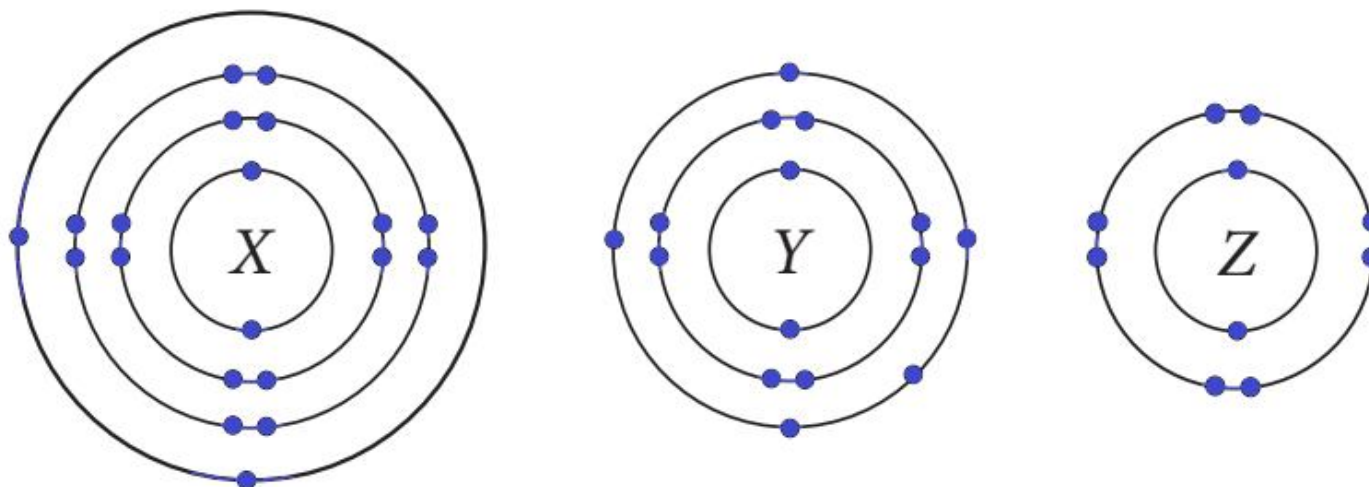
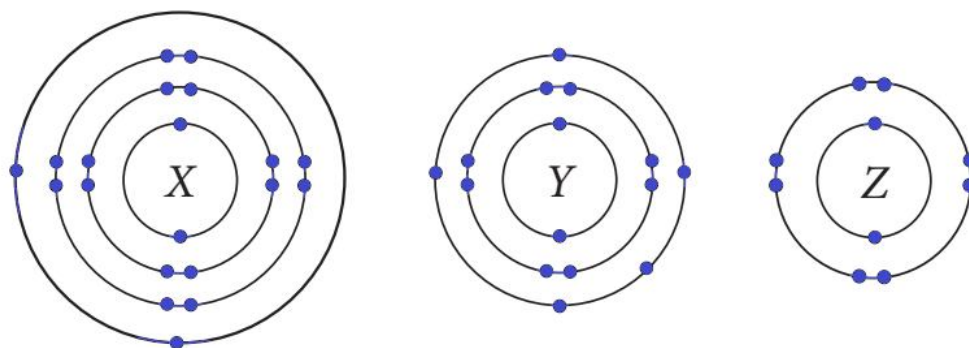


CASE STUDY QUESTION 24

Read the following and answer any four questions from (i) to (v)

The electron configuration of an element describes how electrons are distributed in its atomic orbitals. Electron configurations of atoms follow a standard notation in which all electron-containing atomic subshells (with the number of electrons they hold written in superscript) are placed in a sequence. The diagram below shows the electron arrangement of three atoms of elements X, Y and Z.





(i) Which of the following is the electronic configuration of X?

(a) 2, 8, 8, 2

(b) 2, 2, 8, 8

(c) 2, 8, 5

(d) 2, 8

X : 2, 8, 8, 2;

Y : 2, 8, 5;

Z : 2, 8

Ans: (a) 2, 8, 8, 2

(ii) Number of valence electrons in Y is

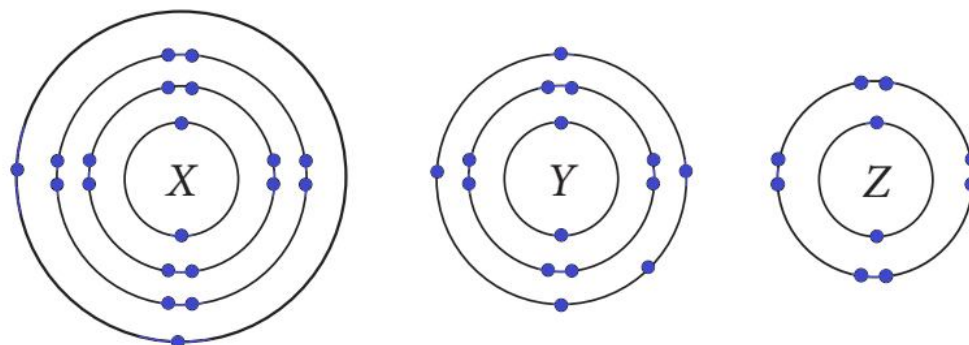
(a) 1

(b) 2

(c) 5

(d) 15

Ans: (c) 5



(iii) Which of the following has the most metallic character?

- (a) X (b) Y (c) Z (d) None of these

X is a Group II element and hence it is a metallic element.

Ans: (a) X

(iv) Element Y achieve the electron structure of a noble gas by gaining

- (a) 1 electron (b) 2 electrons (c) 3 electrons (d) 4 electrons

Y gains 3 electrons to achieve noble gas configuration.

Ans: (c) 3 electrons

(v) Which of the following statement is incorrect for 2?

(a) Electronic configuration of Z is 2, 8.

(b) It is a noble gas.

(c) It can gain electrons.

(d) It can neither lose nor gain electrons.

Atom Z will neither lose nor gain electrons. It has two completely filled outermost electron shells.

Ans: (c) It can gain electrons.