CBSE

STRUCTURE OF ATOM WS 3

Class 09 - Science

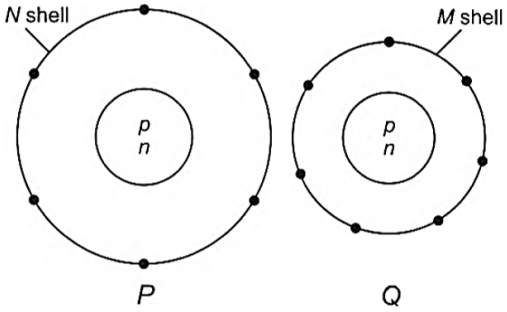
Section A

1. The electronic configuration of Cl^- ion is **[1]**

   a) 2, 8, 6 b) 2, 8, 7

   c) 2, 8, 8, 1 d) 2, 8, 8

2. Electron distribution of two elements P and Q in their outermost shell is shown below. **[1]**



   Atomic numbers of P and Q are respectively

   a) 17, 24 b) 9, 17

   c) 15, 17 d) 24, 17

3. An element has 3 valence electrons in its outermost 3^{rd} shell, the name of element is **[1]**

   a) B b) Mg

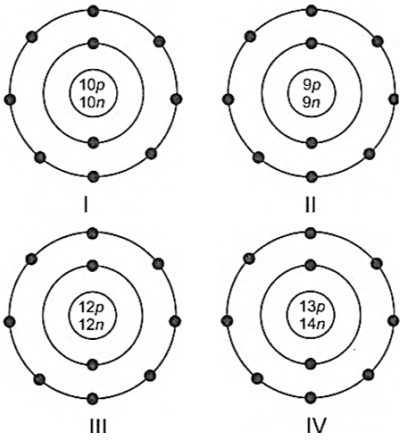
   c) Ga d) Al

4. If K, L, M, N, shells of an atom are full. The total number of electrons in that atom are: **[1]**

   a) 26 b) 36

   c) 60 d) 42

5. Which of the following schematic structures represent(s) cation(s)? **[1]**



   a) III and IV only b) IV only

   c) II only d) I and II only

6. The order of the energy shells is: **[1]**

a) K < L < N < M < O

b) K < M < L < N < O

c) L < K < M < N < O

d) K < L < M < N < O

7. Which of the following correctly represent the electronic distribution in the Mg atom? **[1]**

a) 8, 2, 2

b) 2, 8, 2

c) 3, 8, 1

d) 1, 8, 3

8. The triad which is isoelectronic **[1]**

a) Mg^{2+}, F^{-}, O

b) Na^{+}, O^{2-}, Ne

c) Na^{+}, Al, N_3^{-}

d) Cl^{-}, Ar, Ca

9. An element has electronic configuration 2, 8, 4. It will be classified as **[1]**

a) Metalloid

b) Noble gas

c) Non-metal

d) Metal

10. The electron distribution in an aluminium atom is **[1]**

a) 2, 3, 8

b) 2, 8, 2

c) 2, 8, 3

d) 8, 2, 3

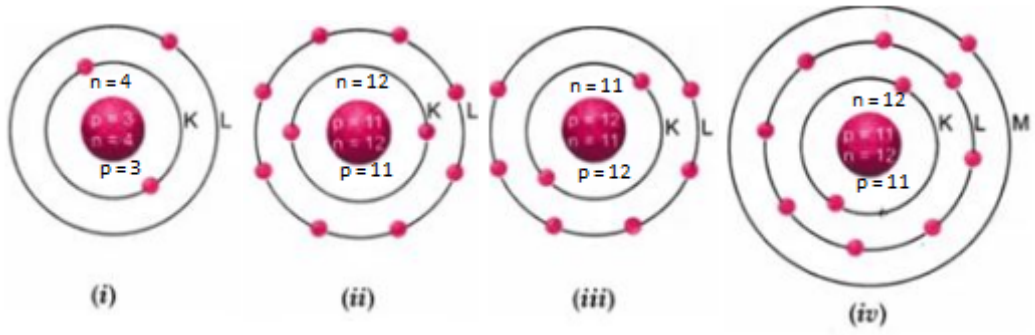
11. **State True or False:** **[1]**

(a) The arrangement of electrons of each element is called the electronic configuration of the element. **[1]**

12. **Fill in the blanks:** **[1]**

(a) The arrangement of electrons of each element is called the _____ of the element. **[1]**

13. Which of the following is Na^{+} ion? **[1]**



a) (ii)

b) (iv)

c) (i)

d) (iii)

14. Match the following with the correct response: **[1]**

(a) Carbon	(i) 2
(b) Sodium	(ii) 2, 8, 1
(c) Argon	(iii) 2, 4
(d) Helium	(iv) 2, 8, 8

a) (a) - (iv), (b) - (i), (c) - (iii), (d) - (ii)

b) (a) - (ii), (b) - (iv), (c) - (i), (d) - (iii)

c) (a) - (iii), (b) - (ii), (c) - (iv), (d) - (i) d) (a) - (i), (b) - (iii), (c) - (ii), (d) - (iv)

15. Match the following with the correct response: **[1]**

(a) Distribution of electrons	(i) Electronic configuration
(b) In a neutral atom	(ii) Gain or loss of electrons
(c) Ions	(iii) Electrons are always equal to protons
(d) Molecule	(iv) Stable

a) (a) - (ii), (b) - (iv), (c) - (i), (d) - (iii) b) (a) - (iv), (b) - (i), (c) - (iii), (d) - (ii)

c) (a) - (iii), (b) - (ii), (c) - (iv), (d) - (i) d) (a) - (i), (b) - (iii), (c) - (ii), (d) - (iv)

16. Match the following with the correct response: **[1]**

(a) Carbon	(i) 2, 8, 1
(b) Sodium	(ii) 2
(c) Argon	(iii) 2, 8, 8
(d) Helium	(iv) 2, 4

a) (a) - (i), (b) - (iii), (c) - (ii), (d) - (iv) b) (a) - (iii), (b) - (ii), (c) - (iv), (d) - (i)

c) (a) - (ii), (b) - (iv), (c) - (i), (d) - (iii) d) (a) - (iv), (b) - (i), (c) - (iii), (d) - (ii)

17. Which of the following statements is/are correct about β-particles : **[1]**

a. They are electrons.

b. They are deflected towards the positive electrode.

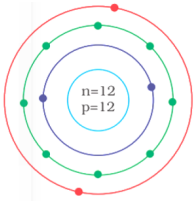
c. They travel at the speed of sound.

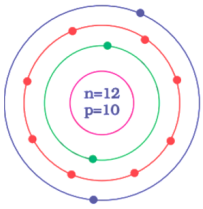
d. They are deflected towards the negative electrode.

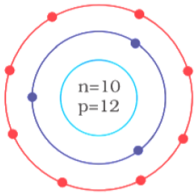
a) All of these b) (a) and (b) are correct

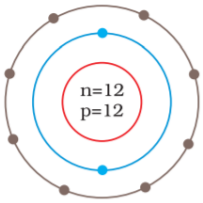
c) (b) and (c) are correct d) (a), (b) and (c) are correct

18. Identify the Mg^{2+} ion from the figure where, n and p represent the number of neutrons and protons respectively. **[1]**

a) 

b) 

c) 

d) 

19. Write down the electron distribution of chlorine atom. How many electrons are there in the L shell? (Atomic number of chlorine is 17). **[1]**

20. Are the electrons stationary in the stationary states? **[1]**

21. If the K and L shells of an atom are full, then what would be the number of electrons in the atom? **[1]**

22. What is the number of electrons in the valence shell of chlorine (Z = 17) ? **[1]**

23. What is the maximum number of electrons which can be accommodated in 'N' shell? **[1]**

Section B

24. Write the electronic configuration of a positively charged sodium ion (Na^+). Atomic number of sodium is 11. **[2]**

25. Write the distribution of electrons in carbon and sodium atoms. **[2]**

26. The atomic number of lithium is 3. It's mass number is 7. **[2]**

    i. How many protons and neutrons are present in a lithium atom?

    ii. Draw the diagram of a lithium atom.

27. Na^+ has completely filled K and L shells. Explain. **[2]**

28. If K and L shells of an atom are full, then what would be the total number of electrons in the atom? **[2]**

29. The element sulphur has atomic number 16, and mass number 32. State the number of protons, electrons and neutrons in it. Give the arrangement of the electrons in different energy shells. What is the valency of the element ? **[2]**

30. Which of the following electronic configurations is wrong and why? **[2]**

    (a) 2, 8, 2

    (b) 2, 8, 8, 2

    (c) 2, 8, 9, 1

Section C

31. i. What is an octet? How do elements attain an octet? **[5]**

    ii. Make a schematic atomic structure of magnesium and phosphorus.

    [Given number of protons of magnesium =12 and that of phosphorus = 15]