

CHEMISTRY ASSIGNMENT,(2013-2014)

CHAPTER: STRUCTURE OF ATOM_ TERM2

Q.1. What are Canal rays?

Q.2. On the basis of Thomson's model of an atom explain how the atom is neutral as a whole.

Q.3 Draw a sketch of Bohr's model of an atom with three shells.

Q.4. Helium atom has atomic mass of 4u and has two protons in the nucleus. How many neutrons does it have?

Q.5. If the K and L shells of an atom are full, then what would be the number of electrons in the atom?

Q.6. If the number of electrons in an atom is 8 and the number of protons is also 8, then ;

(i) What would be the atomic number of the atom?

(ii) What is the charge on the atom?

Q.7. Na⁺ ion has completely filled k and L shells.Explain.

Q.8. The average atomic mass of a sample of element X is 16.2 u. What are the percentages of isotopes, $^{16}_8\text{X}$ and $^{18}_8\text{X}$ in the sample?

Q.9. If Z=3, what would be the valency of the element ? Also, name the element.

Q. 10. Composition of the nuclei of two atomic species X and Y are given as under

	Protons	Neutrons
X	6	6

Y	6	8
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Give the mass numbers of X and Y. What is the relation between the two species ?

Q.11. Why do the elements helium, neon and argon have zero valency?

Q.12. Why do elements which exist as isotopes have fractional atomic masses ?

Q.13. Are mass number and atomic mass of an element equal in all respects?

Q.14. The element ALuminium is written by the symbol $^{27}_{13}\text{Al}$. Write the number of protons,electrons and neutrons present in it.

Q.15. The electronic configuration of an element Z is 2, 8, 6. How many electrons does it require to have a stable configuration?

Q.16. Two atoms A and B have the following composition

Atom A
17 protons

Atom B
17 protons

18 neutrons

20 neutrons

What are their mass numbers ? What is the relation between the species ?

Q.17. The composition of two atomic particles is given :

X

Y

Protons

8

8

Neutrons :

8

9

Electrons :

8

8

(i) What is the mass number of X ?

(ii) What is the mass number of Y ?

Q.18. Briefly describe the features of the Rutherford Model of an atom. what are the drawbacks ?

Q.19. How do isotopes and isobars differ? Write three applications of isotopes.

Q. 20. What observations in scattering experiment led Rutherford to make the following conclusions:

(i) Most of the space in an atom is empty.

(ii) Whole mass

of an atom is present in its centre.

(iii) Nucleus is positively charged.

Q.21. Explain why did Rutherford select a gold foil in his alpha ray scattering experiment

Q.22. The atomic numbers of atoms of two elements are 18 and 20 respectively and their mass numbers are 40. What is the name that can be given to such pairs of atoms. Will they have same chemical characteristics?

Q. 23. Give reasons for the following:

(a) Isotopes of an element are chemically similar.

(b) An atom is electrically neutral

(c) Noble gases show least reactivity

(d) Nucleus of an atom is heavy and positively charged.

(e) Ions are more stable than atoms.

Q.24. Which of the two will be chemically more reactive; element X with atomic number 17 or element Y with atomic number 16?

Q.25. An unknown species X has 17 protons and 18 electrons. Predict its nature.