

India's Number 1 Education App

## **CHEMISTRY**

## **BOOKS - SWAN PUBLICATION**

## STRUCTURE OF THE ATOM

## Questions

1. What are canal rays?



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**2.** If an atom contains one electron and one proton,will it carry and charge or not?



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



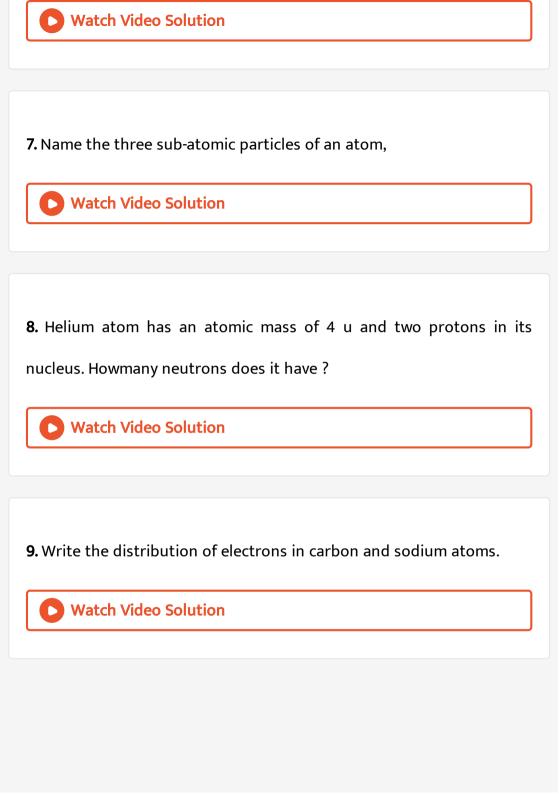
**4.** On the basis of Rutherford's model of an atom which sub-atomic particle is present in the molecule of an atom ?



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



**6.** What do you think what would be the observation if the a-particle scattering experiment is carried out using a foil of metal other than gold?



10. If K and L shell of an atom are full then what would be the total number of electrons in it?

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11. How will you find the valency of chlorine, sulphur and magnesium?



**12.** If number of electrons in an atom are 8 and number of protons are also 8,then :What is the charge on the atom?



13. find out the mass of oxygen and sulphur atom.



**14.** For the symbol H,D and T tabulate three fundamental particles found in each of them.



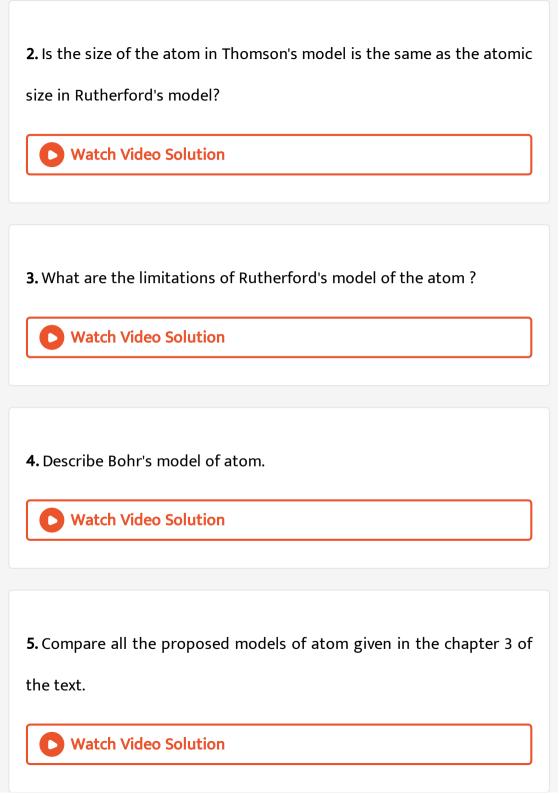
**15.** Write the electronic configuration of any one pair of isotopes and isobars.



Exercise

1. Compare the properties of electron, proton and neutron





6. Summarize the rules for writing of distribution of electrons in various shells for the first eighteen elements.

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**7.** Define valency by taking examples of silicon and oxygen.



**8.** Define the terms nucleus, nucleons, atomic number, mass number, isotopes, isobars, isotones.



**9.**  $Na^{\,+}$  has completely filled K and L shells. Explain.



**10.** If bromine atom is in the form of say isotopes  $^{79}_{35}Br$  (49.7%) and

 $^{81}_{35} Br$  (50.3%) then calculate the average mass of bromine atom.



**11.** The average atomic mass of a sample of an element X is 16.2 u, what are the percentages of isotopes  ${}^{16}_8X$  and  ${}^{18}_8X$  in the sample?



**12.** IfZ= 3, what would be the valency of the element? Also, name the element



13. Composition of the nuclei of two atomic species X and Y are given

as under

$$= X Y$$

Proton = 6

Neutrons = 6 8

Give the mass numbers of X and Y. What is the relation between the

two species?



**14.** (true/false) J.J. Thomson proposed that the nucleus of an atom contains only nucleons.



**15.** (true/false) A neutron is formed by an electron and a proton combining together. Therefore, it is neutral



**16.** (true/false) The mass of an electron is about 1/2000 times that of proton.



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17. (true/false) Isotope of iodine is used for making tincture iodine, which is used as a medicine



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**18.** Rutherford's alpha-particle scattering experiment was responsible for the discovery of

A. Atomic Nucleus

B. Electron

C. Proton

Answer: A  Watch Video Solution  19. Isotopes of an element have  A. the same physical properties  B. different chemical properties  C. different number of neutrons  D. different atomic numbers.	D. Neutron	
9. Isotopes of an element have  A. the same physical properties  B. different chemical properties  C. different number of neutrons  D. different atomic numbers.	Answer: A	
A. the same physical properties  B. different chemical properties  C. different number of neutrons  D. different atomic numbers.	Watch Video Solution	
A. the same physical properties  B. different chemical properties  C. different number of neutrons  D. different atomic numbers.		
B. different chemical properties  C. different number of neutrons  D. different atomic numbers.	<b>9.</b> Isotopes of an element have	
C. different number of neutrons  D. different atomic numbers.  Answer: C	A. the same physical properties	
D. different atomic numbers.  Answer: C	B. different chemical properties	
nswer: C	C. different number of neutrons	
	D. different atomic numbers.	
• with a lie	Answer: C	
Watch Video Solution	Watch Video Solution	

**20.** Number of valence electrons in Cl-ion are :

A. 16 B. 8 C. 17 D. 18 **Answer: B Watch Video Solution** 21. Which one of the following is a correct electronic configuration of sodium? A. 2, 8 B. 8, 2, 1 C. 2, 1, 8

D. 2, 8, 1

## Answer: D



# **22.** Complete the following table :

1

Atomic No. Mass No. Number Number Number Name of the of Neut. of Prot. of Elect. Atomic Species

9 - 10 - - - -

9 - 10 - - - - - 16 32 - - Sulphur - 24 - 12 - -

1



Important Q A

**1.** What is Rutherford's a-ray scattering experiment ? Give its observations. Howdoes Rutherford explain this observations ?



**2.** Describe the essential properties of the atom nucleus. Compare these with the properties of the electron.



**3.** A student weighs 30 kg. Suppose his entire body is made up of electrons. How many electrons are there in his body? Compare the total number of electrons in his body with the population of india.



**4.** What problem of atomic structure was solved by the discovery of neutron ?



**5.** Describe the distribution of electrons in different shells of the following atoms: Lithium, nitrogen, neon, magnesium and silicon.



**6.** If an element M has mass number 24 and atomic number 12, how many neutrons does its atom contain ?



**7.** The mass number of an element is 18. It contains 7 electrons. What is the number of protons and neutrons in it? What is the atomic number of the element?



**8.** Give the nuclear composition and electronic configuration of first 20 elements (with atomic number 1-20).

