





# **CHEMISTRY**

# **BOOKS - MBD**

# **STRCTURE OF ATOM**



1. What are canal rays?

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. 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 ?

6. Name the three sub-atomic particles of an

atom,



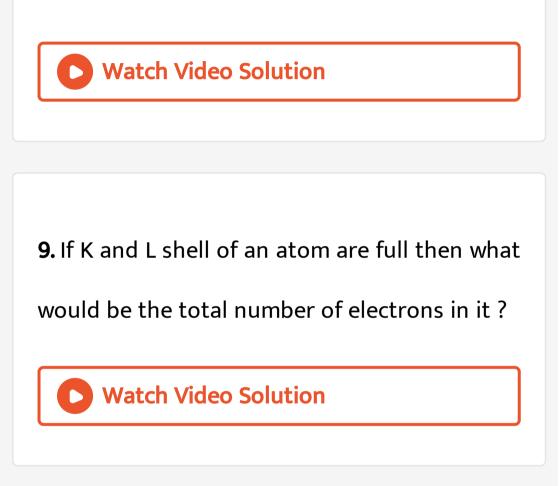
7. Helium atom has an atomic mass of 4 u and

two protons in its nucleus. Howmany neutrons

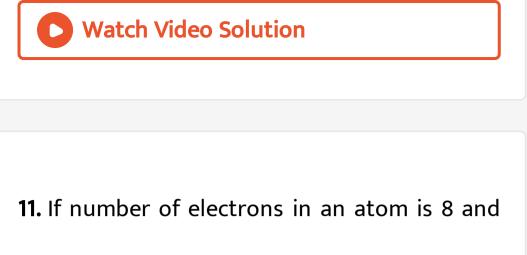
does it have ?

8. Write the distribution of electrons in carbon

and sodium atoms.



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



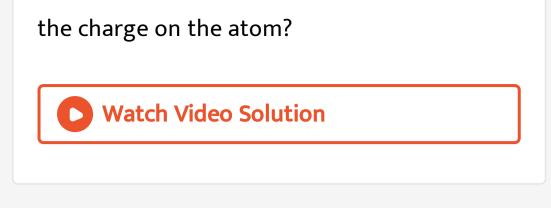
number of protons is also 8, then

(i) What is the atomic number of the atom ? ,

and (ii) what is the charge on the atom ?



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



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

atom.

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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.

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16. Compare the properties of electron, proton

and neutron

17. What are the limitations of J.J. Thomson

model of atom ?

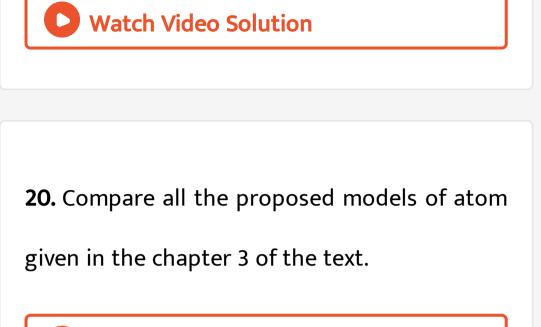
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18. What are the limitations of Rutherford's

model of atom ?

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19. Describe Bohr's model of atom.



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

22. Define valency by taking examples of silicon

and oxygen.

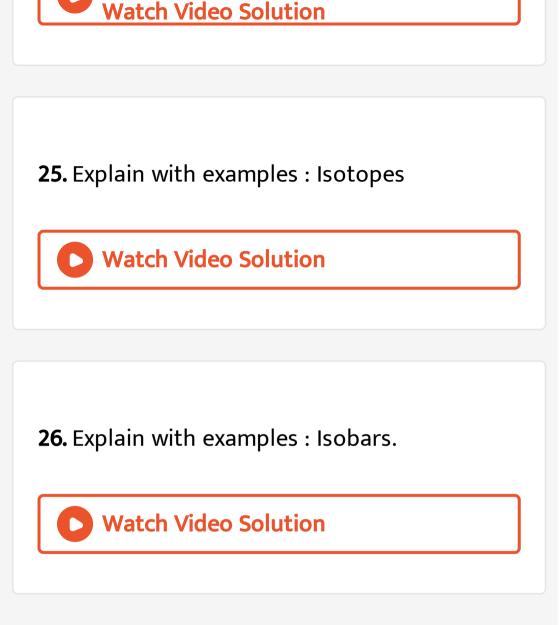


# **23.** Explain with examples : Atomic number

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24. Explain with examples : Mass number





**27.**  $Na^+$  has completely filled K and L shells. Explain.

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**28.** 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.

29. The average atomic mass of a sample of an

element X is 16.2 u, what are the percentages

of isotopes  $\frac{16}{8}X$  and  $\frac{18}{8}X$  in the sample?

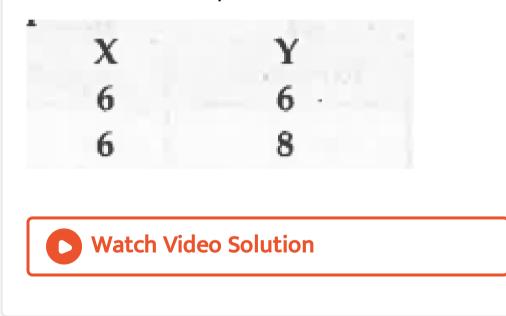


#### 30. IfZ= 3, what would be the valency of the

element ? Also, name the element

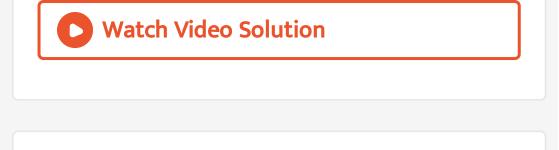


**31.** Composition of the nuclei of two atomic species X and Y are given as under : Give the mass numbers of X and Y. What is the relation between the two species ?



32. (true/false) J.J. Thomson proposed that the

nucleus of an atom contains only nucleons.



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



34. (true/false) The mass of an electron is

about 1/2000 times that of proton.

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

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**36.** Put tick ( $\sqrt{}$ ) against correct choice and cross (x) against wrong choice in following question : Rutherford's alpha-particle scattering experiment was responsible for the discovery of:

A. Atomic Nucleus

**B. Electron** 

C. Proton

D. Neutron

#### Answer:

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**37.** Put tick  $(\sqrt{)}$  against correct choice and cross (x) against wrong choice in following question : Isotopes of an element have :

A. The same physical properties

B. Different chemical

C. Different number of neutrons

D. Different atomic number

**Answer:** 

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**38.** Put tick ( $\sqrt{}$ ) against correct choice and cross (x) against wrong choice in following

question : Number of valence electrons in  $Cl^-$  ion are: A. 16 B. 8

C. 17

D. 18

Answer:



**39.** 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:**

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

Atomic Number	Mass Number	Number of Neutrons	Number of Protons	Number of Electrons	Name of the Atomic Species
9	_ 1	10	-	2 - <sup>1</sup> 8	
16	32		The second state		Sulphur
-	24	-	12		-
-	2	-	1		-
-	1	0	1	0	

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

**42.** Most of the a-particles passed through the gold foil without any deflection from their original path.

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### 43. Discuss in brief Rutherford's Model of

atom.

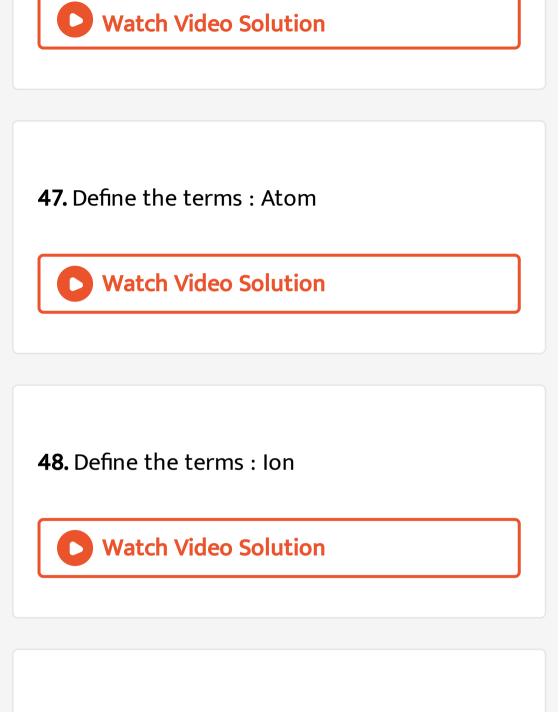
**44.** Give the electronic distribution in the first twenty elements on the basis of Bohar-Bury scheme.



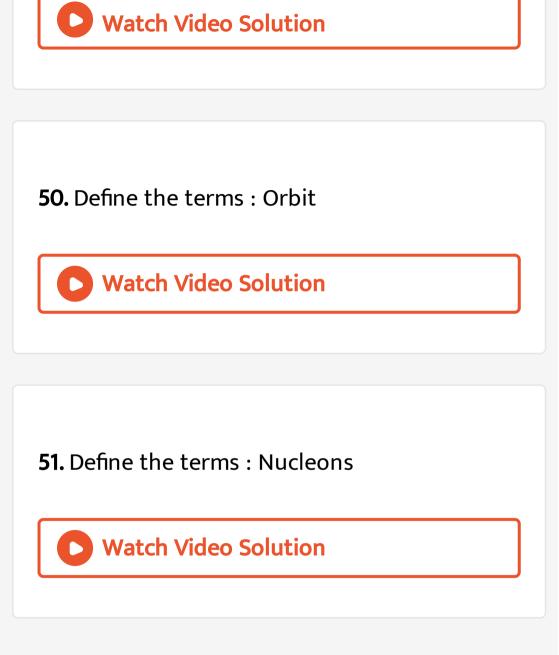
#### **45.** Define the terms: Atomic number



**46.** Define the terms : Mass number



49. Define the terms : Element



52. What do you understand by the structure

of atom

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**53.** What happens when electric field is applied to the path of cathode rays ? What does it show ?

**54.** What is the information conveyed by the following observations :Atom is electrically neutral.



**55.** What is the information conveyed by the

following observations Mass of the atom is

due to the nucleus.



**56.** What is the significance of number of protons found in the atoms in each of the different elements ?

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**57.** Write the electronic configuration of the elements A, B, C, D, E with atomic numbers 5, 6, 14, 13 and 15. Which have similar chemical properties ?

58. Helium has only 2 electrons in the K-shell.

But it is called an inert gas element.Why?

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**59.** An atom has mass number A and atomic number Z.How many protons are present in the nucleus ?

**60.** An atom has mass number A and atomic number Z.) How many electrons are revolving around the nucleus ?



**61.** An atom has mass number A and atomic number Z. How many neutrons are present in its nucleus ?

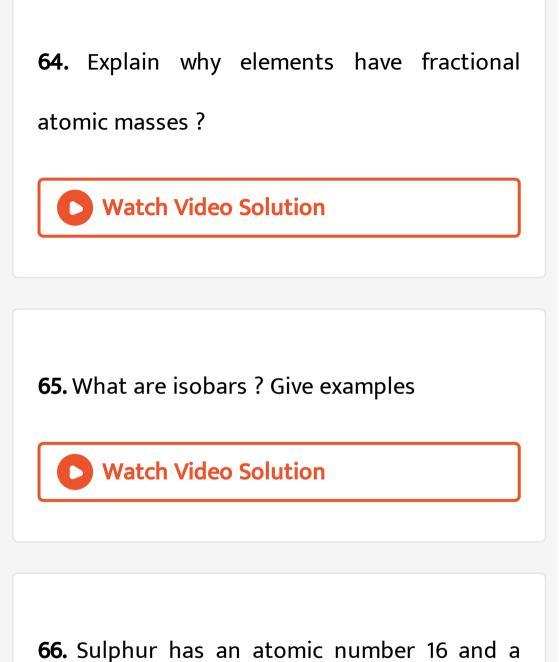
62. State three ways by which a proton differs

from an electron.



**63.** What are isotopes ? Give two uses of isotopes. Name the isotopes of hydrogen.Give their structures.





mass of 32. State the number of protons and

neutrons in the nucleus of sulphur. Give a simple diagram to show the arrangement of electrons in an atom of sulphur.



67. Write down the electronic configuration of

the following  $: {}^{27}_{13}X$ 

68. Write down the electronic configuration of

the following  $: {}^{35}_{17}X$ 

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69. Give the important properties or

characteristics of isotopes.

70. An atom of the element is represented as

 $^{61}_{23}X$  ? What does the numeral 23 indicate ?

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#### 71. An atom of the element is represented as

 $^{61}_{23}X$  ? What does the numeral 61 indicate ?

72. An atom of the element is represented as

 $^{61}_{23}X$  ? What is the number of protons in X ?

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**73.** The atom of an element is made up of 4 protons, 5 neutrons and 4 electrons. What are

its atomic number and mass number ?



74. Calculate the number of neutrons in the

following elements  $:_1^3 H$ 

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**75.** Calculate the number of neutrons in the following elements  $:_{17}^{37}Cl$ 

76. Calculate the number of neutrons in the

following elements  $:^{40}_{18}Ar$ 

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77. Give two conditions under which cathode

rays are produced.



78. The electronic configuration of P (Z=15) is 2,

8, 5, why is the valency of phosphorus is 3 and

not 5 ?



**79.** What information is conveyed by the statement that the mass number of magnesium is 24 and the atomic number is 12 ?

**80.** Is it possible for an atom to have 12 protons and 13 electrons ? Explain

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**81.** Give the important isotopes of hydrogen,carbon, oxygen and chlorine. Indicate their mass numbers and atomic numbers

**82.** Chlorine has two isotopes  ${}^{35}_{17}Cl$  And  ${}^{37}_{17}Cl$  in the ratio 3:1. Calculate the average atomic mass of chorine.



### **83.** Out of 18X and 16Y which atom is chemically more reactive ?

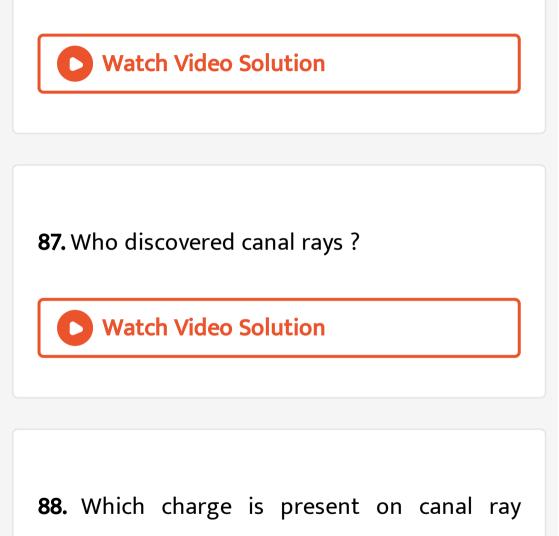
**84.** An element has 12 neutrons and mass number 23. Give the atomic number and symbol of the element.



# **85.** Calculate number of protons, neutrons and electrons in ${}^{235}_{92}U$ and ${}^{238}_{92}U$ . How are these atoms related ?

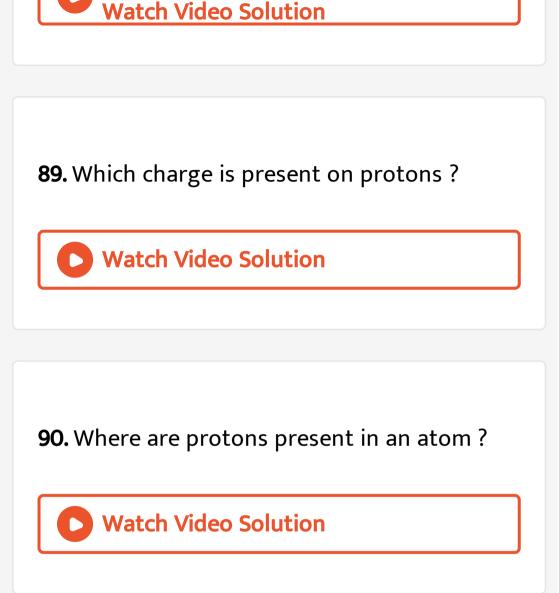
86. Calculate the number of electrons, protons

and neutrons is  ${}^{19}_{9}X$  . Also calculate its valency.



particles ?





91. What were the characteristics of an atom

according to Dalton?

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#### 92. Which discovery is against Dalton's theory

#### ?



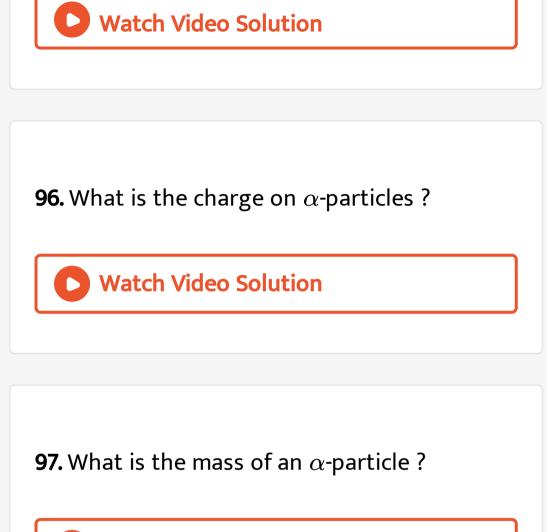
93. Who proposed the first model for the structure of atom ?
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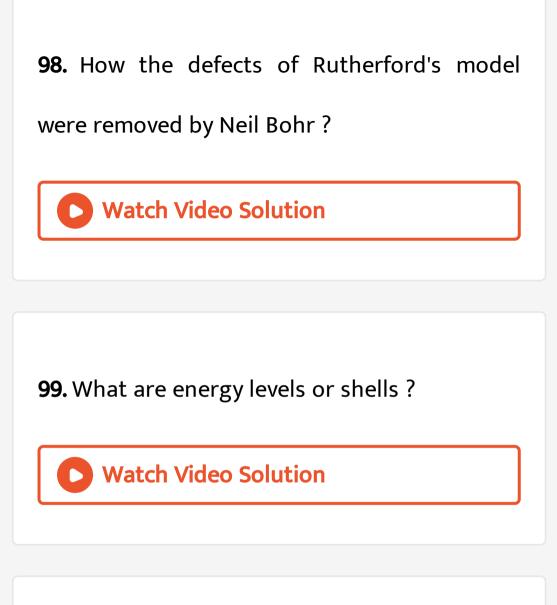
94. Why did Rutherford used gold foil in a-ray

scattering experiment ?

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**95.** What are  $\alpha$ -particles?





100. Define mass number of an element.

101. Who gave the distribution of electrons in

the various shells of an atom ?



## **102.** What is the maximum number of electrons present in an electronic shell ?



103. What is the maximum first four shells of

an atom ?

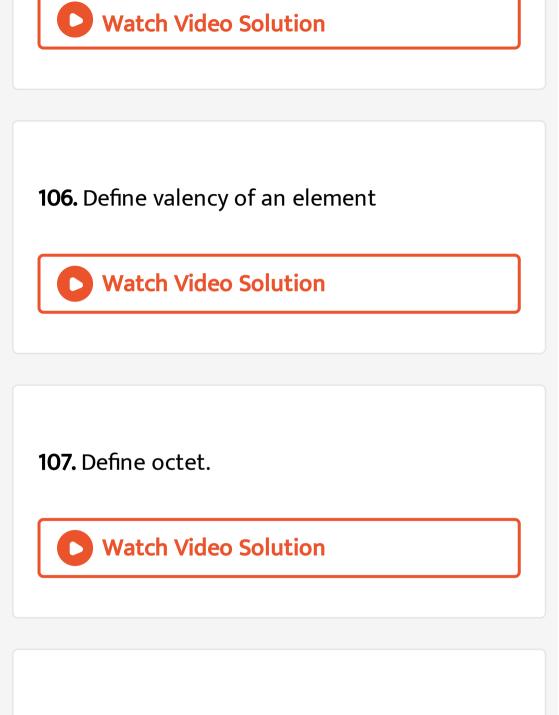
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#### 104. What is the maximum number of

electrons in the outermost shell of an atom ?

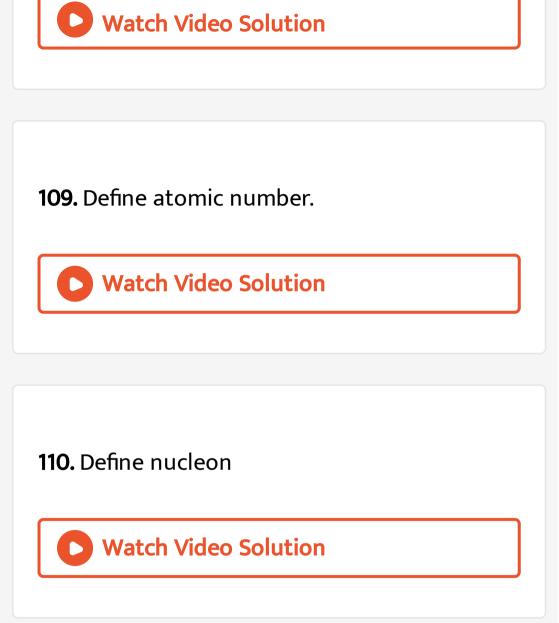
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**105.** Which element are Chemically inert?



**108.** Define valency of an element.

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**111.** Where is most of the mass of the element

present?

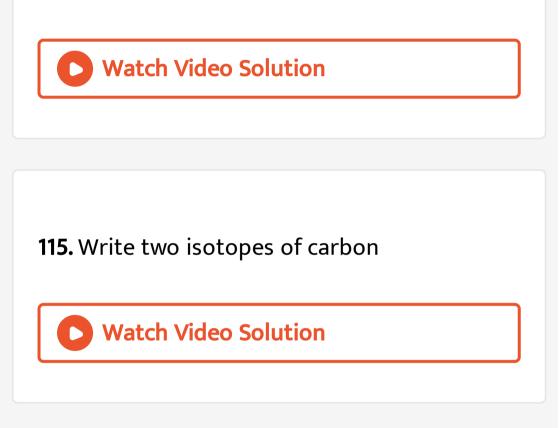
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**112.** Define atomic mass of an element.

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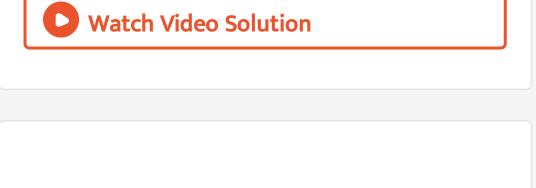
**113.** What are isotopes?

**114.** Write two isotopes of chlorine.



116. Isotope of which element is used in atomic

reactor?



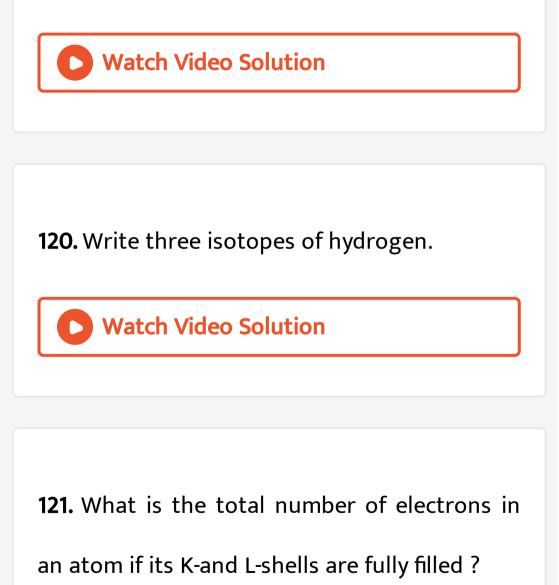
117. Isotope of which element is used for the

treatment of goitre ?

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**118.** What are isobars ?

**119.** Give one example of isobars ?



122. What electrons in an atom influence its

chemical properties ?



**123.** How will you represent chlorine atom having mass number 35 and atomic number 17

?



124. Name the sub-atomic particle on which

size of an atom depends ?



**125.** Name the atoms having same atomic number but different mass numbers

**126.**  $Mg^{2+}$  has 10 electrons What is the number of protons in it? Watch Video Solution

127. Name the element which has no neutrons

in the nucleus of its atom.



128. Out of electrons, protons and neutrons,

which are same in isotopes ?

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**129.** There are three isotopes of hydrogen  ${}^1_1H$  ,

 ${}^{2}_{1}H$ ,  ${}^{3}_{1}H$  all are electrically neutral, why ?

**130.** An element has atomic number 16. Give its electronic configuration and number of valence electrons.



**131.** The number of electrons in the valence shell of sodium (Na) is.....



132. Fluorine belongs to..... Family.



133. In an atom, the number of.....is the same

as number of ..... .

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134. Isotopes of an element are.....because

they have ..... number of electorns and protons.



#### 135. The number of electrons in the valence

shell of an atom cannot be ..... .