



CHEMISTRY

BOOKS - NAND LAL PUBLICATION

STRUCTURE OF THE ATOM

Intext Questions

1. What are canal rays?



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2. If an atom contains one electron and one proton, will it carry any 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.



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



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



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



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7. Name the three sub-atomic particles of an atom,



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



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9. Write the distribution of electrons in carbon and sodium atoms.



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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 ?



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12. If number of electrons in an atom is 8 and 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 ?



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13. With the help of table find out the mass number of oxygen and sulphur atom .

	<i>Atomic number</i>	<i>No. of protons</i>	<i>No. of neutrons</i>	<i>No. of electrons</i>	<i>Valency</i>
Oxygen	8	8	8	8	2
Sulphur	16	16	16	16	2



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



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



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Exercises

1. Compare the properties of electron, proton and neutron



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2. What are the limitations of J.J. Thomson's model of the atom ?



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3. What are the limitations of Rutherford's model of the atom ?



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4. Describe Bohr's model of atom.



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5. Compare all the proposed models of atom given in the chapter 3 of the text.



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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.



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8. Define atomic number.



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9. Explain with examples : Mass number



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10. Explain with examples : Isotopes



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11. Explain with examples : Isobars.



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



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13. Na^+ has completely filled K and L shells.

Explain.



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14. If bromine atom is in the form of say isotopes ${}_{35}^{79}Br$ (49.7%) and ${}_{35}^{81}Br$ (50.3%) then calculate the average mass of bromine atom.



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15. The average atomic mass of a sample of an element X is 16.2 u, what are the percentages of isotopes 1_8X and ${}^{18}_8X$ in the sample?



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



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

	=	X	Y
Proton	=	6	6
Neutrons	=	6	8

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



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18. For the following statements write T for true and F for false .

(a) J.J . Thomson proposed that the nucleus of

an atom contains only nucleons .

(b) A neutron is formed by an electron and a proton combining together . Therefore it is neutral .

(c) The mass of an electron is about $\frac{1}{2000}$ times that of a proton .

(d) Isotope of iodine is used for making tincture iodine which is used as a medicine .



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

A. Atomic Nucleus

B. Electron

C. Proton

D. Neutron

Answer: A



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20. Isotopes of an element have

- A. the same physical properties
- B. different chemical properties
- C. different number of neutrons
- D. different atomic numbers

Answer: C



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21. Number of valence electrons in Cl^- ion are :

A. 16

B. 8

C. 17

D. 18

Answer: B



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22. 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



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23. Complete the following table:

Atomic Number	Mass Number	Number of Neutrons	Number of Protons	Number of Electrons	Name of the Atomic Species
9	-	10	-	-	-
16	32	-	-	-	Sulphur
-	24	-	12	-	-
-	2	-	1	-	-
-	1	0	1	0	-



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Additional Questions Very Short Answer Type Questions

1. Name the fundamental building blocks of matter .



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2. How is an electron represented ?



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3. Who discovered the proton ?



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4. How is a proton represented ?





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Additional Questions Short Answer Type Question

1. Name the fundamental building blocks of matter .



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2. What is the cause of elasticity?



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3. What are the major challenge before the scientist at the end of the 19 th century ?



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4. What is the elucidation of structure of atoms based on ?



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5. From where do we get the first indicate that atoms are not indivisible ?



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Additional Questions **Long Answer Type**
Questions

1. Give the properties of cathode rays ?



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