



CHEMISTRY

NCERT - NCERT CHEMISTRY(ENGLISH)

STRUCTURE OF THE ATOM

Solved Example

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 an atom as a whole is neutral.



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4. On the basis of Rutherford's model of an atom, which subatomic particle is present in the nucleus 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 would be the observation if the α -particle scattering experiment is carried out using a foil of a 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 shells of an atom are full, then what would be the total number of electrons in the atom?



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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 atoms ?



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13. With the help of Table 4.1, find out the mass number of oxygen and sulphur atom.



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14. For the symbol H,D and T tabulate three sub-atomic 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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Exercise

1. Compare the properties of electrons, protons and neutrons.



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



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3. Describe Rutherford atom model. What are the drawbacks of this model?



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4. What are the postulates of Bohr's model of an atom?



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5. Compare all the proposed models of an atom given in this chapter.



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6. Summarise 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. Explain with examples (i) Atomic number, (ii) Mass number, (iii) Isotopes and (iv) Isobars.

Give any two uses of isotopes



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9. Na^+ has completely filled K and L shells. Explain.



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10. Calculate the atomic mass (average) of chlorine using the following data:

	% Natural Abundance	Molar Mass
^{35}Cl	75.77	34.9689
^{37}Cl	24.23	36.9659



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11. A sample of oxygen atoms contain only ${}_{8}\text{O}^{16}$ and ${}_{8}\text{O}^{18}$ isotopes. If the average atomic mass of the sample is 16.8, then identify the options which correctly tells the % composition of ${}_{8}\text{O}^{16}$?



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



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

	X	Y
Protons =	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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14. A free neutron decays into a proton an electron and



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15. For the following statement. write 'T' for True and 'F' for False.

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



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16. An isotope of iodine is used for making tincture iodine, which is used as a medicine.



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17. Rutherford's experiment on the scattering of α particle showed for the first time that the

atom has

A. Atomic Nucleus

B. Electron

C. Proton

D. Neutron

Answer: A::C



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18. Isotopes of an element have

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

Answer: B::D



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

A. 16

B. 8

C. 17

D. 18

Answer: option 2



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20. Which one of the following is a correct electronic configuration of sodium?

A. 2, 8

B. 8, 2, 1

C. 2, 8, 1

D. 2, 8, 1

Answer: A::B



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21. Complete the following table.



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True False

1. For the following statement, write T for True and F for False.

J.J. Thomson proposed that the nucleus of an atom contains only nucleons.



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