CHEMISTRY

NCERT - NCERT CHEMISTRY (GUJRATI)

ATOMIC STRUCTURE-I

Example

1. What is the total number of orbitals associated with the principal quantum number n=3 ?

Watch Video Solution

2. Using s, p, d, f notations, describe the orbital with the following quantum numbers (a) n=2, l = 1 (b) n = 4, l = 0 (c) n = 5, l = 3 (d) n = 3, l = 2.

Watch Video Solution

Questions A Choose The Best Answer

1. Atomic mass of an element is not necessarily a whole number because :

A. It contains electrons, protons and neutrons

B. It contains allotropic forms

C. Atoms are no longer considered indivisible

D. It contains isotopes

Answer:

Watch Video Solution

2. No two electrons in an atom will have all four quantum numbers equal. The statement is known as

A. Exclusion principle

B. Uncertainity principle

C. Hund's rule

D. Aufbau principle

Answer: Exclusion principle

Watch Video Solution

3. When the 3d orbital is complete, the new electron will enter the

A. 4p orbital

B. 4f orbital

C. 4s orbital

D. 4d orbital

Answer: 4p orbital

Watch Video Solution

4. The preference of three unpaired electrons in the nitrogen atom can be explained by :

A. Pauling's exclusion principle

B. Aufbau principle

C. Uncertainty principle

D. Hund's rule

Answer: Hund's rule

Watch Video Solution

5. The number of orbitals in a p-sub-shell is

A. 1

B. 2

C. 3

D. 6

Answer: 3

 Watch Video Solution

6. The nucleus of an atom contains :

A. Electrons and protons

B. Neutrons and protons

C. Electrons, protons and neutrons

D. Neutrons and electrons

Answer:

Watch Video Solution

7. Which is the lightest among the following?

A. An atom of hydrogen

B. An electron

C. A neutron

D. A proton

Answer: An electron

Watch Video Solution

8. Which of the following has no neutrons in the nucleus?

A. Deuterium

B. Helium

C. Hydrogen

D. Tritium

Answer: Hydrogen

Watch Video Solution

9. When the value of the azimuthal quantum number is 3, the magnetic quantum number can have values :

A. $+1, -1$

B. $+1, 0, -1$

C. $+2, +1, 0, -1, -2$

D. $+3, +2, +1, 0, -1, -2, -3$

Answer: $+3, +2, +1, 0, -1, -2, -3$

Watch Video Solution

10. 2p orbitals have :

A. n = 1,l = 2

B. n=1, l = 0

C. n = 2, l = 0

D. n = 2, l =1

Answer: n = 2, l =1

Watch Video Solution

11. The atomic number of an element is 17 and its mass number is 37. The number of protons, electrons and neutrons present in the neutral atom are :

A. 17, 37,20

B. 20,17,37

C. 17, 17, 20

D. 17, 20,17

Answer: 17, 17, 20

Watch Video Solution

12. The maximum number of electrons that can be accommodated in the nth level is:

A. n^2

B. $n+1$

C. $n-1$

D. $2n^2$

Answer: $2n^2$

Watch Video Solution

13. The magnetic quantum number decides :

A. The distance of the orbital from the nucleus

B. The shape of the orbital

C. The orientation of the orbital in space

D. The spin of the electron

Answer: The orientation of the orbital in space

 Watch Video Solution

Questions B Fill Up The Blanks

1. The decomposition of an electrolyte by passage of electricity is known as .....

Watch Video Solution

2. When cathode rays are focused on thin metal foil, it gets heated up to .....

Watch Video Solution

3. Cathode rays produce .....on the walls of the discharge tube.

Watch Video Solution

4. The radiations which were not influenced by a magnet were called.....

Watch Video Solution

5. Neutrons are discovered by ....

Watch Video Solution

Questions C Write In One Or Two Sentence

1. What is the charge of an electron, proton and a neutron ?

Watch Video Solution

2. What is atomic number?

Watch Video Solution

3. What is the maximum number of electrons that an orbital can have?

 Watch Video Solution

4. How many orbitals are there in the second orbit? How are they designated?

 Watch Video Solution

5. What are the charge and mass of an electron?

Watch Video Solution

6. What is an orbital?

Watch Video Solution

7. Give the order of filling of electrons in the following orbitals 3p, 3d,4p, 3d and 6s.

Watch Video Solution

8. How many protons and neutrons present in ${}_{8}^{18}O$?

Watch Video Solution

9. What are the particles generally present in the nuclei of atoms?

Watch Video Solution

10. The atomic mass of an element is 24 and its atomic number is 12. Show how the atom of the element is constituted?

Watch Video Solution

11. What is the principal defect of Bohr atom model?

Watch Video Solution

12. An atomic orbital has n = 3. What are the possible values of l ?

Watch Video Solution

13. An atomic orbital has l= 3. What are the possible values of m?

Watch Video Solution

14. Give the electronic configuration of chromium. (Z=24).

Watch Video Solution

15. Which energy level does not have p-orbital?

Watch Video Solution

16. An atom of an element has 19 electrons. What is the total number of p-orbital?

Watch Video Solution

17. How many electrons can have s+ ½ in a d-sub-shell?

Watch Video Solution

18. Write the values of l and m for p-orbitals

Watch Video Solution

19. Which quantum accounts for the orientation of the electron orbital?

Watch Video Solution

20. What is shape of the orbital with (i) n = 2 and l = 0 , (ii) n = 2 and l = 1?

Watch Video Solution

21. Give the values for all quantum numbers for 2p electrons in nitrogen (Z = 7).

Watch Video Solution

22. Give the electronic configuration of Mn^{2+} and Cu. Atomic number of Cu = 29 and Mn = 25.

Watch Video Solution

23. Explain why the electronic configuration of Cr andCu are written as $3d^5, 4S^1$ and $3d^{10}4s^1$ instead of $3d^44s^2$ and $3d^94s^2$?

Watch Video Solution

Questions D Explain Briefly On The Following

1. Using the s, p, d, notation, describe the orbital with the following quantum numbers?

(a) n = 1, l=0, (b) n = 2,l = 0, (c) n = 3, l = 1, (d) n = 4, l =3.

Watch Video Solution

2. Using the a Aufbau principle, write the electronic configuration in the ground state of the following atoms : Boron (Z = 5) Neon (Z = 10) and Aluminium (Z = 13).

Watch Video Solution