

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

tissue. When oxygen is present in cells, polyphenol oxides (PPO) enzymes in the chloroplast rapidly oxidize phenolic compounds naturally present in the apple tissue to o-quinones, colorless precursors to brown-coloured secondary products.

14. How you define flammability?

Ans: Flammability is defined as how easily can a substance burn. When matter burns, it combine with oxygen and changed to different substance. Wood is an example of flammable matter.

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5

STRUCTURE OF AN ATOM

Questions and Activities

A. MCQs (Choose the correct option)

1. Neutrons carry
 - a. no electric charge
 - b. positive charge.
 - c. negative charge.
 - d. unit charge.

Ans: no electric charge

2. The smallest particle of an element is:

- a. Molecule
- b. Atom
- c. Cell
- d. DNA

Ans: Atom

3. Carbon has a mass number of 12. It has protons and neutrons:

- a. 6,6
- b. 12,6
- c. 12,12
- d. 6,12

Ans: 6,6

4. The nucleus of an atom contains:

- a. Protons, electrons and neutrons
- b. Electrons and protons
- c. Protons and electrons
- d. Protons and neutrons

Ans: Protons and neutrons

5. Protons carry:

- a. Positive charge
- b. Negative charge
- c. No charge
- d. Zero charge

Ans: Positive charge

6. The atomic number of an element tells the number of:

- a. Electrons and neutrons
- b. Protons only
- c. Protons and neutrons
- d. Neutrons only

Ans: Protons only

7. If the atomic mass of nitrogen is 14, and it has 7 neutrons, how many electrons does a nitrogen atom have?

- a. 8
- b. 6
- c. 14
- d. 7

Ans: 7

8. The mass number of an atom is represented by

- a. A
- b. B
- c. Z
- d. M

Ans: A

9. Nitrogen is an element with the symbol N and the atomic

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number is 7. It's electronic configuration is represented as

- a. 2,5 b. 2,6
c. 5,2 d. 2,2

Ans: 2,5

10. what is the sequence of the elements in the periodic table, ${}_3\text{Li}, {}_4\text{Be}, {}_2\text{He}, {}_7\text{N}$

- a. He, Li, Be, N
b. N, Li, Be, He
c. He, N, Li, Be
d. N, He, Li, Be.

Ans: He, Li, Be, N

B. Short questions.

1. An atom has an atomic number of 8 and a mass number of 16.

a. Determine the number of protons present in it

Ans: Number of protons = Mass number - Number of Neutrons
= 16 - 8
= 8 Ans

b. Determine the number of neutrons present in it

Ans: No. of neutron = Mass number - No. of Proton
= 16 - 8
= 8 Ans

c. Determine the number of electrons present in it

Ans: No. of electrons = Mass number - No. of protons
= 16 - 8
= 8 Ans

2. Find the meaning of periodic from the dictionary. Explain the arrangement of element into periods and groups in a periodic table

Ans: The meaning of periodic is occurring or recurring of regular interval.

Groups and periods are two ways of categorizing element in the periodic table. Periods are horizontal rows (across) the periodic table, while groups are vertical column (down) the table. Atomic number increases as you move down a group or across a period.

C. Long questions

1. What is an atom? Describe the structure of an atom in terms of protons, neutron and electrons. Explain with the help of an example that atom is electrically neutral.

Ans: The matter is made of tiny particles called atoms. An atom is made up of three subatomic particles Protons, electrons and neutrons. An atom consists of two regions as shown in the diagram in the fig. The center of the atom is called a nucleus. The nucleus contains Protons and neutrons. Protons have a positive charge, while neutrons have no charge, mean they are neutral. The Second, much large, region of the atom is a 'cloud' of electrons. They carry a negative charge and they orbit around the nucleus in fixed shell.

An atom is electrically neutral. This means that in an atom the number of protons is equal to the number of electrons.

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2. How is periodic table a way to organize elements in a systematic manner? What are the rows and columns of the periodic table and how are they helpful.

Ans: Elements are arranged in increasing number of protons or we can say increasing atomic number. When the elements are arranged correctly, the trends in elements properties become apparent and can be used to make predictions about unknown or unfamiliar elements simply based on their placement on the table. The vertical columns are also called groups or families. All the members of a family have the same number of valence electrons and similar chemical properties. The horizontal rows on the periodic table are called Periods, that show the same number of shells for the elements.

D. Structure questions

1. The diagram shown on the right is the structure of an atom.

- i. Recognize the atom.



Ans: This is the sodium atom.

- ii. How many electrons are there in this atom?

Ans: There are eleven (11) electrons in this atom.

- iii. What is the electrical charge on an electron? (Choose from: negative, neutral, positive).

Ans: The electrical charge on an electron is negative.

- iv. Give the names to the different levels of the electrons around the nucleus?

Ans: The different levels of the electrons around the nucleus are K, L, M, and N.

2. The nucleus of an atom contains two types of particles.

- i. What are the names of these two types of particles?

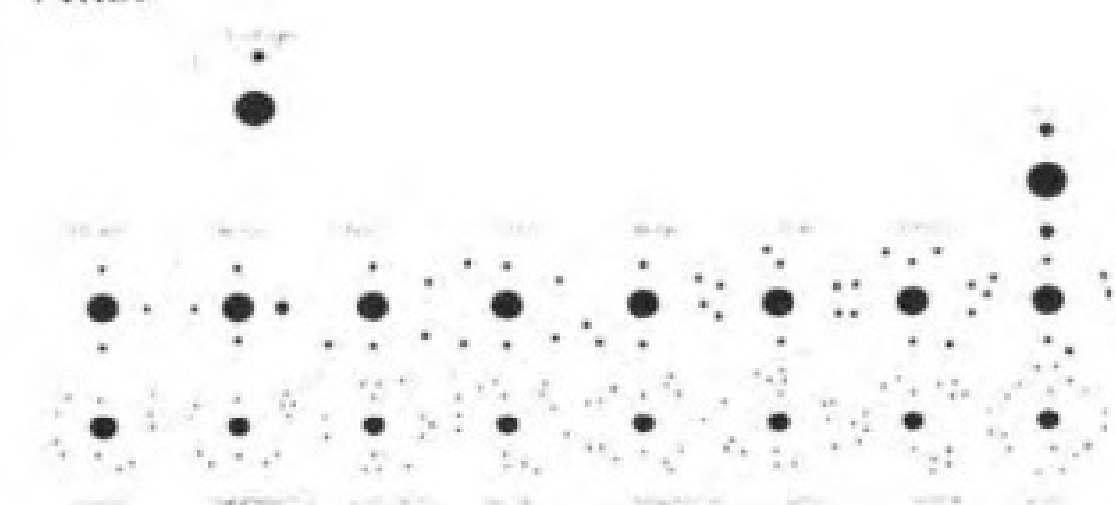
Ans: 1) Protons (2) Neutrons.

- ii. What is the electrical charge on the nucleus of an atom?

Ans: No charge. (neutral)

3. With the help of given diagrams draw the electronic arrangement of first eighteen element showing the number of electron, protons and Write the number of protons and neutrons in the nucleus and colour the electrons in blue colour.

Ans:



E. Project Work

Design and build a 3D model of a special atom of your choice

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showing the atomic structure (including protons, neutrons and electrons) The model must be free –standing and creative.

Ans: Glue two small craft balls to the small circle eight on the medium circle, eight to the large circle, and then two to the extra- large circle. These will resemble all the electrons on the atom. Attach a place of string to the outer circle to help the model hang.

MCQs (Choose the correct option)

1. The matter is made up of tiny particles called.

- a. cells b. molecules
c. atoms d. RNA

Ans: c. atoms

2. Honeycomb is made up of smaller cell.

- a. pentagonal b. Hexagonal
c. Heptagonal d. Octagonal

Ans: b. Hexagonal

3. Electrons carry

- a. negative charge
b. no electric charge
c. positive charge
d. unit charge

Ans: a. negative charge

4. Nuclear Model introduced in.

- a. John Dalton
b. J.J Thomson
c. Ernest Rutherford
d. Neils Bohar

Ans: c. Ernest Rutherford

5. Quantum Model introduced in.

- a. 1904 b. 1911
c. 1913 d. 1926

Ans: d. 1926

6. They form the centre of the nucleus.

- a. protons and neutrons
b. electrons and protons
c. electrons and neutrons
d. None of them

Ans: a. protons and neutrons

7. The number of _____ defines the identity of an element.

- a. cells b. neutrons
c. protons d. electrons

Ans: c. protons

8. The electronic configuration is the distribution of different shells.

- a. neutrons b. electrons
c. protons d. DNA

Ans: b. electrons

9. The distribution of electrons is calculated by a formula.

- a. n^2 b. n^3
c. $2n^2$ d. $2n$

Ans: c. $2n^2$

10. M shell can hold up to _____ electrons

- a. 4 b. 8
c. 16 d. 18

Ans: d. 18

11. Electrons arrangement in chlorine is

- a. 2,8,7 b. 2,8,8
c. 2,8,1 d. 2,8,2

Ans: a. 2,8,7

12. Neon has eight electrons in its outermost shell and has complete.

- a. duplet b. Triplet
c. Octet d. None of then

Ans: c. Octet

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13. The maximum number of electron filled in the first shell is.

- a. one b. two
c. three d. four

Ans: b. two

B. Short questions.

1. Define an element.

Ans: An Element is a pure matter which has the same type of atoms and retains all of the chemical properties of that element. For example, a gold coin is made up of gold atoms put together in a shape of a coin.

2. What is nucleons?

Ans: Both protons and neutrons are called nucleons.

3. What is mean by period -1?

Ans: Elements like Hydrogen and Helium are in period __1__ which means they have one orbit of electron.

4. What do you know about Group 18?

Ans: Group 18 has the noble gases Helium, Neon, Argon, Radon, Krypton and Xenon which have low melting and boiling points, and they each are colourless, odourless, tasteless and non-flammable. This group is called as low chemical reactive group.

5. How many electrons do you think the M shell can hold?

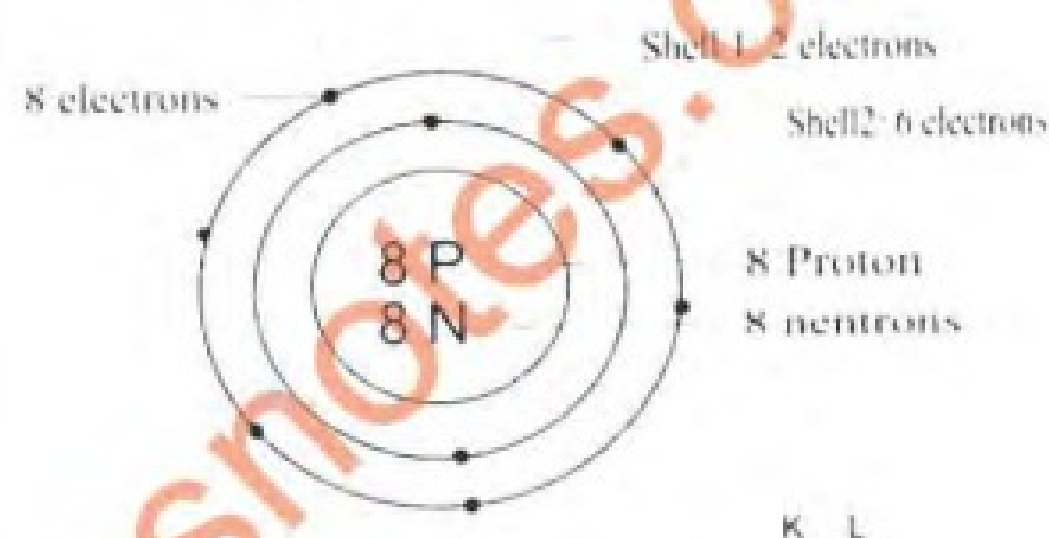
Ans: M shell can hold up to following electrons
 $2n^2 = 2(3)^2$
 $2 \times 3 \times 3 = 18$ electrons

6. Define electronic configuration.

Ans: The distribution of electrons in different shell is called electronic configuration.

7. Explain the atomic structure of oxygen.

Ans: Oxygen has 8 protons, 8 neutrons and 8 electrons.



Electrons arrangement: 2 6

8. How can we find the number of neutrons?

Ans: The number of neutrons in an atom can be calculated by subtracting the atomic number from the atomic mass.

Number of neutrons = A - Z

9. What do you mean By $^A_Z X$

Ans: X = chemical symbol for the element

A = Mass number = A = Z + N

Z = Atomic number = number of protons.

10. Which makes an atom a neutral entity?

Ans: The number of protons and electrons of an atom as always the same which makes an atom a neutral entity

