WORKSHEET 1

CHAPTER 12 – RADIOACTIVITY AND NUCLEAR ENERGY

A. Tick (✓) the correct option.

1. The protons and neutrons in the nucleus are called
   a. nucleons. b. electrons. c. mass number. d. none of these.
2. The diameter of the nucleus is
   a. 10^{-10} m. b. 10^{-5} m. c. 10^{-15} m. d. 10^{-1} m.
3. The maximum number of electrons, an outermost shell can hold are
   a. 15. b. 8. c. 10. d. 12.
4. Atoms of elements having same atomic number but different mass numbers are called
   a. isotones. b. isotopes. c. isobars. d. none of these.
5. The charge on an electron is equal to
   a. 0 b. 1.602×10^{-19} C c. 1.602×10^{-3} C d. 1.602×10^{-10} C

B. Fill in the blanks.

1. The number of protons present in the nucleus of an atom is equal to _____
2. The phenomenon of spontaneous emission of radiations by heavy elements is called _____
3. _____ is used for the treatment of bone diseases.
4. _____ have the least penetrating power.
5. The nucleus of hydrogen does not contain any _____

C. State whether the following statements are true or false.

1. Most of the space in an atom is empty.
2. Atoms of element having same mass number but different atomic numbers are called isotopes.
3. α-particles are light and negatively charged.
4. γ-radiations have very high penetrating power.
5. X-rays are used in security machines at airports to scan baggage.

D. Match the following.

1. Radioactive sodium	negatively charged
2. Electrons	positively charged
3. Neutrons	1.602×10^{-19} J
4. Protons	no charge
5. 1 electron volt	restricted circulation of blood

Name: ..... Teacher's signature: .....

Class: X Date: .....

E. Answer the following questions.

Very short answer questions

1. Name the two types of chain reactions.
2. Define radioactivity.

Short answer questions

1. What are isobars? Give one example.
2. What is electronic configuration of a hydrogen atom?

Long answer questions

1. Differentiate between electron, proton and neutron.
2. What are the methods to reduce radiation pollution?

ANSWERS

WORKSHEET 1

A. Tick (✓) the correct option.

1. a 2. c 3. b 4. b 5. b

B. Fill in the blanks.

1. atomic number
2. radioactivity
3. Radioactive phosphorus
4. α-particles
5. neutron

C. State whether the following statements are true or false.

1. T 2. F 3. F 4. T 5. T

D. Match the following.

1. Radioactive sodium	restricted circulation of blood
2. Electrons	negatively charged
3. Neutrons	no charge
4. Protons	positively charged
5. 1 electron volt	1.602×10^{-19} J

E. Answer the following questions.

Very short answer questions

1. They are of two types
   i. Controlled chain reaction.
   ii. Uncontrolled chain reaction.
2. The phenomenon of spontaneous emission of radiations by heavy elements is called radioactivity.

Short answer questions

1. Atoms of different elements having same mass number (A) but different atomic numbers (Z). are called isobars. For example, $^{23}_{11}Na$ and $^{23}_{12}Mg$.
2. **Hydrogen**

Mass number = 1

Atomic number = 1

Electronic configuration

K	L	M	N
1	–	–	–

Long answer questions

1. Refer Table 12.1, Page 251 of the textbook.
2. The methods are as follows:
   i. Any sort of leakage from reactors, transport handling, fission products, and radioisotope should be banned.
   ii. Manufacture and use of nuclear weapons should be banned.
   iii. Recycling of used nuclear fuel by processing.
   iv. Limiting the emission of radioactive pollutants.
   v. Radioactive waste should be disposed after proper treatment so that radioactivity is at very low level.