Matter and its atomic structure

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Practice Problems with Solution

Question 1: The fourth state of matter is _____
A: solid
B: plasma
C: gas
D: Bose-Einstein condensation

Question 2: The most abundant element in the universe is _____
A: hydrogen
B: nitrogen
C: oxygen
D: carbon

Question 3: Which sub-atomic particle in the atom has negligible mass?
A: electron
B: proton
C: neutron
D: positron

Question 4: Electrons were discovered by _____
A: Rutherford
B: James Chadwick
C: Neils Bohr
D: J J Thomson

Question 5: The only element in the Periodic Table that does not have any neutrons is _____
A: Helium
B: Hydrogen
C: Lithium
D: Beryllium

Question 6: The elements having same atomic number but different mass numbers are called _____
A: isotones
B: isobars
C: isotopes
D: isoelectronic species

Question 7: The theory that the electrons revolve around the nucleus in circular paths called orbits was propounded by _____
A: J J Thomson
B: Neils Bohr
C: Max Planck
D: Rutherford

Question 8: The atomic number of an element is equal to _____
A: the number of neutrons in the nucleus
B: the number of protons in the nucleus
C: the number of electrons in the outermost orbit
D: the sum of neutrons and protons in the nucleus

Question 9: Name the scientist who suggested the theory of dual nature of matter?
A: Albert Einstein
B: Max Planck
C: Neils Bohr
D: de Broglie

Question 10: Law of conservation of mass states that _____
A: matter can be converted to energy
B: matter can be created by external force
C: matter can neither be created nor be destroyed
D: elements combine to form compounds

Answers and Solutions

1:- B
Solution: The five states of matter are solid, liquid, gas, plasma and Bose-Einstein condensation

2:- A
Solution: Hydrogen is the most abundant element in the universe followed by

3:- A
Solution: The nucleus of an atom consists of protons and neutrons and the mass of the atom is concentrated in its nucleus. Electrons revolve around the nucleus and it has negligible mass.

4:- D
Solution: Electrons were discovered by the British Physicist, J J Thomson in the year 1897 by using a discharge tube and the experiment is known as Discharge Tube experiment.

5:- B
Solution: The nucleus of the hydrogen atom contains only one proton and there are no neutrons. All other elements have at least one neutron in their nucleus.

6:- C
Solution: The elements having same atomic number but different mass numbers are called isotopes. Eg: ${}_6C^{12}$ and ${}_6C^{14}$ are isotopes of carbon.
Protium, Uterium and Tritium are isotopes of hydrogen.
Elements having same mass number but different atomic numbers are called isobars.
Elements having same number of neutrons are called isotones.
Species having same number of electrons are called isoelectronic species.

7:- B
Solution: Neils Bohr, the Danish Physicist suggested an atom model in which electrons revolve around the nucleus in fixed circular paths called orbits.

8:- B
Solution: The number of protons in the nucleus of an atom of the element is called the atomic number of the element. It is also equal to the number of electrons revolving around the nucleus.

9:- D
Solution: The French Physicist, de Broglie proposed that matter exhibits dual behaviour i.e. both particle and wave like properties.

10:- B

Solution: Law of conservation of mass was suggested by Lavoisier and it states that matter can neither be destroyed nor be destroyed. In all physical and chemical changes, there is no net change in the mass of matter.

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