**Modern Physics**

1.Nucleon is a common name for : a .proton and electron

b .electron and neutron c .neutron only

d. neutron and proton

2 .The size of atomic nucleus is the order of: a $.10^{-15}$m b $.10^{-12}$m c. $10^{14}$m d. $10^{10}$m

3 .The ration of atomic volume to nuclear volume is of the order of: a $.10^{-15}$m b $.10^{-12}$ m c $.10^{-10}$m d $.10^{10}$m

4 .The size of atomic volume to nuclear volume is of the order of : a. $10^{15}$ b. $10^{-12 }$ c. $10^{8}$ d $.10^{-8}$

5 .The nucleus of an atom consists of: a. electrons and protons

b. neutron and protons c neutrons and protons

d .proton, electrons and neutron .

6 .The mass number of nucleus is: a. always less than its atomic number b. always more than its atomic number c .some times more than and some times equal to is atomic number d. none of these

7. Particles which can be added to the nucleus of an atom without changing its chemical properties are

a. electrons b. protons c. neutrons d $.α$-particles

8 .The number of electrons in an tom of atomic number Z and mass number A is: a. Z b. *A* c. *A-Z* d. none

9 .One atomic mass of one unit is equal to: a. mass of one atom of hydrogen b. mass of one atom of

c. $\frac{1}{2 }$th of the mass of one atom of

d.none of these

10. The nuclear and can be described as: a .isobars b. isotone c .isotopes and carbon d. none of these

11. The mass density of a nucleus varies with the mass number A as: a. $A^{2}$ b. A c. $\frac{1}{A}$ d. $\dot{A}$

12 The density of nuclear matter is of the order of: a. $10^{3}$kg/$m^{3}$ b $.10^{10}$kg/$m^{3}$ c. $10^{17}$kg/$m^{3}$ d. $10^{24}$ kg/$m^{3}$

13. The nuclear force: a. obeys inverse square law of distance b. obeys inverse third power law of distance c. is a short range force d. is equal in strength to the electromagnetic force

14. If M is the atomic mass of A is its mass number. Then $\frac{M-A}{A}$ is called: a. binding fraction b. Fermi energy c. mass defect d. packing fraction

15. Radioactivity was discovered by: a .JJ Thomson b. W. Roentgen c .H. Becquerel d. M. Curie

16. In $α$-decay: a. mass number A decrease by 4 and atomic number Z increase by 2 b. A decrease by 4 and Z increase by 2 c. A increase by 1 and Z increases by 2 d. none of these

17 .In $β$-decay: a. A remain unaffected, Z increase by 1 b. A is unaffected, Z decrease by 1 c. A increases by 1 and Z is unaffected d. none of these 18. In gamma ($γ)$ decay: a. Both A and Z increase by 1 b. Both A and Z decrease by 1 c. Neither A nor Z changes d. A is always equal to Z

19 .Alpha rays emitted by radioactive substance are: a .negative charged particles

b. hydrogen nuclear c .helium nuclear

d. none of these

20 .Beta rays emitted from a radioactive substance are : a.electromagnetic radiations

b.charged particles emitted by the nucleus c. electrons oorbiting around the nucleus d .none of these

21. A radioactive element $$ , on emitting $α$-particle, changed into: a b c d

22 .Gamma rays are: a. Single ionized gas atom

b .helium nuclear c. fast moving electron d. electromagnetic waves

23. Out of the following the on which can pass through 20 cm thickness of steel is:

a. $α$- rays b. $β$-rays c. $γ$-rays d .ultraviolet rays

24. $γ$-rays are deflected by: a .an electric field but not by a magnetic field b .a magnetic field but not by an electronic field c. both electronic and magnetic field d. neither and electric field nor magnetic field

25 .The radioactive nuclide $$decays by the emission of three $α$-particle nuclide X finally formed is:

a$$ b $.$ c $$ d. $$

26 .The end product of the decay of $\frac{232}{90}$th is $\frac{208}{82}$ Pb. The number of alpha ($α)$ and beta ($β$) particles emitted are respectively: a. 3,3 b .6,4 c.6,0 d. 4,6

27. The nucleus $\frac{115}{48}$ Cd, after two successive $β$ decays will give: a. $\frac{115}{50}$ Sn b. $\frac{113}{50}$ Sn c. $\frac{117}{50}$ Sn d. None

28 .The percentage of the original quantity of a radioactive material left after five lives is approximately:

(a) 1% (b) 3% (c) 5% (d) 20%

29. A radioactive substance has a half life of 4 months. Three fourth of substance will decays in:

 a. 6 months b. 8 months c .12 months d .16 months

30. The half-life of radium of 6400 years. The fraction of a sample of radium that would remain undecayed after 6400 years is: a. $\frac{1}{2 }$ b. $\frac{1}{4}$ c. $\frac{1}{8}$ d. $\frac{1}{16}$