NET, IAS, State-SET (KSET, WBSET, MPSET, etc.), GATE, CUET, Olympiads etc.: Physics MCQs (Practice_Test 3 of 35)

Get unlimited access to the best preparation resource for competitive exams : get questions, notes, tests, video lectures and more [https://www.doorsteptutor.com/]- for all subjects of your exam.

1. At a temperature beyond the Curie point, a
   a. paramagnetic substance behaves as diamagnetic
   b. ferromagnetic substance behaves as paramagnetic
   c. paramagnetic substance behaves as ferromagnetic
   d. ferromagnetic substance behaves as antiferromagnetic

2. In Thompson mass spectrograph, singly and doubly ionised particles form similar parabolae corresponding to magnetic fields of 0.8 T and 1.2 T for a constant electric field. The massess of ionised particles will be in the ratio of
   a. 9: 2
   b. 8: 3
   c. 3: 8
   d. 2: 9

3. In a cyclotron, the time t required to move a charged particle of charge q and mass m in a plane perpendicular to the magnetic field B, in a semicircular path, is
   a. t = m? ∕B q
   b. t = B q v∕. m
   c. t = B∕T? m q
   d. t = T? m Bq

4. Ultraviolet radiation of 6.2 eV falls on an aluminum surface (work function 4.2 eV) . The kinetic energy of the fastest electron emitted is approximately:
   a. 3 × 10 − 21 Joule
   b. 3 × 10 − 19 Joule
   c. 3 × 10 − 17 Joule
   d. 3 × 10 − 15 Joule

5. Consider the following statements: When an electron gets accelerated in an electric field of a nucleus
   a. the electron loses energy by radiation

b. loss of the energy of the electron is proportional to the square of its acceleration

c. the process is known as Bremsstrah-lung

d. characteristic X-ray photon is produced

○ Which of the above statements are correct?

a. 1 and 2

b. 1,2 and 4

c. 2,3 and 4

d. 1,2 and 3

6. If, according to the Bohr model of the hydrogen atom, the ionization energy of the atom in its ground state is 13.6 eV, then the energy required to ionize the atom from its first excited state will be

a. 6.8 eV

b. 3.4 eV

c. 1.7 eV

d. 0.85 eV

7. In a mass spectrograph, an ion X of mass number 24 and charge + e and another ion Y of mass number 22 and charge + 2e, enter a perpendicular magnetic field with the same velocity. The radii of their circular paths in the field will be in the ratio of

a. $\frac{24}{11}$

b. $\frac{11}{2}$

c. $\frac{22}{11}$

d. $\frac{11}{22}$

8. With symbols having the usual meaning, the wavelength of electron of energy 'E' is given by

a. 2 mhE

b. 2h/mE

c. h/? 2 mE

d. 2? 2 mE/h

9. Consider the following radiations:

a. alpha-particle

b. beta-rays

c. gamma-rays

○ The correct sequence of their penetrating powers in increasing order is

a. 1,2, 3

b. 3,2, 1

  c. 2,1, 3

  d. 1,3, 2

10. When a radioactive element decays by gamma radiation

  a. its mass number will decrease. By one unit with no change in atomic number

  b. its mass number will not change but the atomic will increase by one unit

  c. both mass number and atomic number of the element change

  d. there will be no change in either mass number or atomic number of the element

11. A nucleus is in excited state. If it is not able to de-excite itself by gamma emmission, it can de-excite through

  a. electron capture

  b. internal conversion

  c. alpha decay

  d. beta decay

12. Along with? particle emission from a radioactive nucleus, one more particle with zero charge is emitted to conserve the energy and momentum. This particle is called

  a. meson

  b. positron

  c. antineutrino

  d. neutron

13. The frequency of the K line of the characteristic X-ray spectrum is proportional to (Z = atomic number)

  a. $Z^{\frac{1}{2}}$

  b. Z

  c. $Z^{\frac{3}{2}}$

  d. Z2

14. Which one of the following is NOT a Magic number?

  a. 8

  b. 10

  c. 20

  d. 50

15. Consider the following nuclear reactions: Which of the above reactions have been correctly represented?

  a. 1 and 2

  b. 1 and 3

  c. 2 and 3

d. 1,2 and 3

d. 1,2 and 3