Unit 1- Atomic Structure Test 1

Time 20 minutes

Name:_____

1. The name electron was first suggested by

a. Faraday b. Mosely c. Rutherford d. Stony e. Thomson

2. Which statement/s is/are correct about the cathode rays
   a. Cathode rays always travel in straight lines.
   b. Properties of the cathode rays depends on the gas filled in the discharge tube.
   c. There is a deflection in the path of the cathode rays in the presence of a magnetic field.
   d. There is no momentum for cathode rays.
   e. Cathode rays are green in colour.

3. Which statements are correct about an $\propto$ particle
   a. Mass number of $\propto$ particle is 4 and the charge is +2
   b. Penetration power of $\propto$ particles is higher than that of β particles.
   c. $\propto$ particles are nucleus of He.

i. Only a ii Only c iii Only a and b iv Only a and c v. Only b and c

4. Natural copper contains ^{63}Cu and ^{65}Cu both as a mixture. If the relative atomic mass of Cu is 63.6 what is the ration of ^{63}Cu and ^{65}Cu?

   i. 3:7 ii. 7:3 iii. 1:3 iv. 3:1 v. 4:1

5. What is the number of neutrons present in $^{131}_{53}\mathrm{I}$

   i. 53 ii. 54 iii. 51 iv. 127 v. 78

6. Consider the three species given: $^{16}_{8}O^{2-}$, $^{19}_{9}\mathrm{F}^{-}$, $^{20}_{10}Ne$. Which statement is true about these species.
   i. All these species contain 10 electrons each.
   ii. Total number of electrons in all the three species is 27.
   iii. Total number of protons in these three species is 28.
   iv. $^{19}_{9}\mathrm{F}^{-}$ and $^{20}_{10}Ne$ contain 20 electrons each.
   v. Total number of neutrons present in these three species is 27.

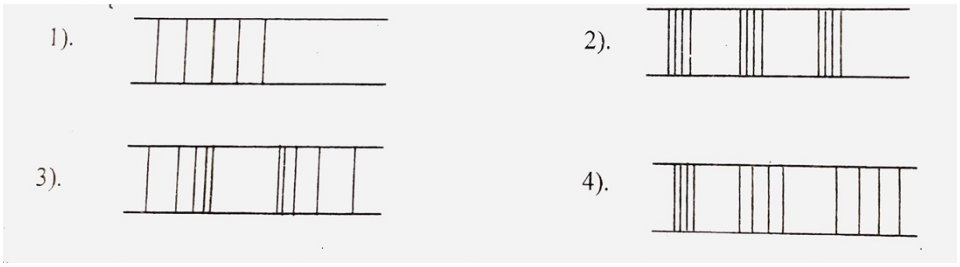
7. The size of nucleus was first determined using
   i. Using $\propto$ deflection experiment
   ii. Using β deflection experiment
   iii. Using fast-moving electrons
   iv. Using a beam of neutrons
   v. Using a technique of absorption of $\propto$ particles.

8. Which one of the following electromagnetic radiations has the highest energy?
   a. Infrared b. microwaves c. ultraviolet d. x-rays
   e. radio waves

9. Which photons out of these has the maximum energy?
   a. Red b. Blue c. Green d. Purple f. Yellow

10. What is correct in regard for the emission spectrum of hydrogen.
    a. The longest wavelength is observed for transition corresponds to n=2 to n=1
    b. $H_{\propto}$ line is given by the electron transition from n=3 to n=2.
    c. Lyman series belongs to the infra-red region of the electromagnetic spectrum.
    d. The gap between two successive lines of a given series of the hydrogen spectrum decreases with increasing energy.

11. Which line spectrum given below has a similarity with the Hydrogen spectrum that you would observe.



5. None of the above matches with the Hydrogen spectrum

12. Which of the following is the correct statement regarding the positive rays generated in a cathode ray tube?

(1) Positive rays are emitted from the anode
(2) A perforated anode must be used to obtain positive radiation
(3) The mass of a particle formed depends on the gas contained in the tube

(4) The e/m ratio of a positive particle is always constant
(5) A particle is formed when gas molecules collide with the cathode