**Tarun Arora**  **R.L. Institute M :9416974837**

**Max Time : 1 hr** **Structure of Atom Max Marks : 20**

1. Ratio of radius of atom to that of nucleus is of the order of

|  |  |  |  |
| --- | --- | --- | --- |
| a) 10-10 | b) 10-15 | c) 105 | d) 10-5 |

1. The application of electric and magnetic fields deflected certain rays in the discharge tube toward cathode. This proved that

|  |  |
| --- | --- |
| a) Electrons are negatively charged particles | b) Protons are positively charged particles |
| c) Neutrons are neutral particles | d) None of the above statements are true |

1. Select the correct statement.

a) Visible light consists of electromagnetic waves of oscillating electric and magnetic fields

b) In vacuum, types of all electromagnetic radiation travel at the same speed

c) Both (a) and (b) are correct statements

d) None of the above is correct statement

1. Threshold energy is also called

|  |  |
| --- | --- |
| a) Work function | b) potential energy (PE) |
| c) kinetic energy (KE) | d) Sum of (PE) and (KE) |

1. Bohr model can explain the spectrum of

|  |  |
| --- | --- |
| a) the hydrogen atom only | b) an atom or ion having one electron only |
| c) the hydrogen molecule only | d) the sodium atom only |

1. Of the following, radiations with maximum wavelength is

|  |  |  |  |
| --- | --- | --- | --- |
| a) UV | b) Radio wave | c) X - Ray | d) IR |

1. Size of the nucleus is

|  |  |  |  |
| --- | --- | --- | --- |
| a) 10-13 cm | b) 10-10 m | c) 10-1 m | d) all are correct |

1. Which of the following relates to light as wave motion

|  |  |  |  |
| --- | --- | --- | --- |
| a) Diffraction | b) Interference | c) Both (a) & (b) | d) None of these |

1. Number of photons emitted by a 100 W (Js-1) yellow lamp in 1.0 s is (λ of yellow light is 560nm)

|  |  |  |  |
| --- | --- | --- | --- |
| a) 2.8 X 1020 | b) 2.8 X 1018 | c) 1.1 X 1020 | d) 2.2 X 1020 |

1. One of the lines in the spectrum of atomic hydrogen has wave number 533.16 cm-1. What is the frequency of this line?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 5.623 X 106 s-1 | b) 1.876 X 1011 s-1 | c) 1.598 X 1013 s-1 | d) 1.598 X 1014 s-1 |

1. When a certain metal was irradiated with light of frequency 3.2 X 1016 Hz, photo electrons emitted had twice the kinetic energy as did photoelectrons emitted when the same metal was irradiated with light of frequency 2.0 X 1016 Hz. Hence, threshold frequency is

|  |  |  |  |
| --- | --- | --- | --- |
| a) 0.8 X 1015 Hz | b) 8.0 X 1015 Hz | c) 0.8 X 1014 Hz | d) 6.4 X 1016 Hz |

1. The cathode-ray experiments carried out J. J. Thomson demonstrated that

a) α-particles are the nuclei of He atoms

b) the ratio of charge to mass for the particles of the cathode rays is constant if different gases are placed in the tube

c) the mass of an atom is essentially all contained in its very small nucleus

d) cathode rays are streams of negatively charged ions

1. Which of the following statements about the electron is incorrect?

a) It is a negatively charged particle

b) The mass of electron is equal to the mass of neutron

c) It is a basic constituent of all atoms

d) It is a constituent of cathode rays

1. Calculate the wavelength of a photon in Angstrom units having energy of one electron volt

|  |  |  |  |
| --- | --- | --- | --- |
| a) 12.42 X 103 Å | b) 1.242 X 103 Å | c) 124.2 Å | d) 156 Å |

1. The ratio of the wavelengths corresponding to the frequencies ʋ1 = 7.35 X 10 -14 s-1  and ʋ2 = 4.47 X 10 -14 s-1 in case of electromagnetic radiations is

|  |  |  |  |
| --- | --- | --- | --- |
| a) 0.92 | b) 1.92 | c) 0.61 | d) 1.61 |

1. Calculate the kinetic energy of the electron ejected when yellow light of frequency 5.2 X 1014 s-1 falls on the surface of potassium metal. Threshold frequency of Potassium is 5 X 1014 s-1.

|  |  |  |  |
| --- | --- | --- | --- |
| a) 1.325 X 10-20joules | b) 1325 Å | c) 26.25 X 10-20joules | d) 2625 Å |

1. What is the ratio between the energies of two radiations, one with a wavelength of 6000Å and other with 2000Å

|  |  |  |  |
| --- | --- | --- | --- |
| a) 3/1 | b) 2/3 | c) 1/3 | d) 3/2 |

1. Two atoms are said to be isobars if

a) They have same atomic number but different mass number

b) They have same number of electrons but different number of neutrons

c) They have same number of neutrons but different number of electrons

d) Sum of the number of protons and neutrons is same but the number of protons is different

1. Identify the pair which are not of isotopes

|  |  |  |  |
| --- | --- | --- | --- |
| a) 6X12 ,6Y13 | b) 17X35 ,17Y37 | c) 6X14 ,7Y14 | d) 4X8 ,4Y9 |

1. What is the energy, in joules, of a photon of IR light with wavelength 4.0 X 10 3 nm?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 5.0 X 10-20 | b) 7.5 X 10-20 | c) 4.0 X 10-16 | d) 2.5 X 10-14 |

**Answers**

**Structure of Atom [CLASS = 11th ]**

|  |
| --- |
| 1. c |
| 2. a |
| 3. c |
| 4. a |
| 5. b |
| 6. b |
| 7. a |
| 8. c |
| 9. a |
| 10. c |
| 11. b |
| 12. b |
| 13. b |
| 14. a |
| 15. c |
| 16. a |
| 17. c |
| 18. d |
| 19. c |
| 20. a |