11TH CBSE STRUCTURE OF ATOM TEST

1) Cathode rays are deflected by _____.

(a) electric field only **(b) electric and magnetic field** (c) magnetic field only (d) none of these

2) In a sodium atom (atomic number = 11 and mass number = 23) and the number of neutrons is _____.

(a) equal to the number of protons (b) less than the number of protons

(c) greater than the number of protons (d) none of these

3) The Balmer series in the spectrum of hydrogen atom falls in _____.

(a) ultraviolet region **(b) visible region** (c) infrared region (d) none of these

4) The idea of stationary orbits was first given by _____.

(a) Rutherford (b) J.J. Thomson **(c) Niels Bohr** (d) Max Planck

5) de Broglie equation is _____.

(a) $\lambda = \frac{h}{mv}$ (b) $\lambda = \frac{hv}{m}$ (c) $\lambda = \frac{mv}{h}$ (d) $\lambda = hmv$

6) The orbital with n = 3 and 1 = 2 is _____.

(a) 3s (b) 3p **(c) 3d** (d) 3j

7) The outermost electronic configuration of manganese (at. no. = 25) is _____.

(a) $3d^5 4s^2$ (b) $3d^6 4s^1$ (c) $3d^7 4s^o$ (d) $3d^6\ 4s^2$

8) The energy needed to remove a single electron (most loosely bound) from an isolated gaseous atom is called _

(a) ionisation energy (b) electronegativity (c) kinetic energy (d) electron affinity

9) The maximum number of electrons in a sub-shell is given by the equation _____.

(a) n^2 (b) $2n^2$ (c) 21-1 **(d) 21 + 1**

10) If the value of azimuthal quantum number is 2, what will be the values for magnetic quantum number?

(a) 2 (b) 3 (c) 4 **(d) 5**

11) Which of the following conclusions could not be derived from Rutherford's a-particle scattering experiment?

(a) Most of the space in the atom is empty

(b) The radius of the atom is about 10^{-10} m while that of nucleus is 10^{-15} m

(c) Electrons move in a circular path of fixed energy called orbits

(d) Electrons and the nucleus are held together by electrostatic forces of attraction

12) On bombarding a beam of a-particles on the atom of the gola sheet, a few particles get deflected whereas most of them go straight and remains undeflected. This is due to _____.

(a) the nucleus occupy much smaller volume as compared to the volume of atom

(b) the force of repulsion on fast moving a-particles is very small

(c) the neutrons in the nucleus do not have any effect on α-particles

(d) the force of attraction on a-particles by the oppositely charged electron is not sufficient

13) According to the electromagnetic theory of Maxwell, which one is correct?

(a) Charged particles when accelerated should emit electromagnetic radiation

(b) Charged particles when accelerated should absorb electromagnetic radiation

(c) Charged particles when retarted should emit EMR (d) None of the above

14) A ray of white light is spread out into a series of coloured bands of visible light are called _____.

(a) visible band **(b) spectrum** (c) electronic spectrum (d) None of these

15) In the line spectrum of hydrogen, the lines described by the formula $\bar{v} = 109,677\left(\frac{1}{2^2} - \frac{1}{n^2}\right) \text{cm}^{-1}$ where, n = integer, n ≥ 3 Constitutes _____.

(a) Balmer series (b) Lyman series (c) Pfund series (d) Paschen series

16) The electronic transition from n = 2 to n = 1will produce the shortest wavelength in (where, n = principal quantum number) _____.

(a) He^+ (b) H (c) H^+ **(d) Li^{2+}**

17) The ionisation enthalpy of hydrogen atom is 1.312 x 10^6 J mol^{-1}. The energy required to excite the electron in the atoms from n_1 = 1 to n2 = 2 is_____.

(a) 6.56 x 10^5 J mol^{-1} **(b) 9.84 x 10^5 J mol^{-1}** (c) 7.56 x 10^5J mol^{-1} (d) 8.51 x 10^5 J mol^{-1}

18) The first line in the Balmer series in the H atom will have the frequency _____.

(a) 3.29 x 10^{15} S^{-1} **(b) 4.57 x 10^{14} S^{-1}** (c) 8.22 x 10^{15} S^{-1} (d) 8.02 x 10^{14} S^{-1}

19) Which of the following properties of atom could be explained correctly by Thomson model of atom?

(a) Overall neutrality of atom7 (b) Spectra of hydrogen atom

(c) Position of electrons, protons and neutrons in atom (d) Stability of atom

20) The spectrum of radiation emitted by a substance after absorbing energy is called _____.

(a) absorption spectrum **(b) emission spectrum** (c) white light spectrum (d) None of the above

21) Which of tM following is the energy of a possible excited state of hydrogen?

(a) +13.6eV (b) -6.8 eV **(c) -3.4eV** (d) +6.8eV

22) The series of lines appearing in UV region of electromagnetic spectrum of hydrogen is called _____.

(a) Bracket series (b) Pfund series **(c) Lyman series** (d) Paschen series

23) If travelling at same speeds, which of the following matter waves have the shortest wavelength?

(a) Electron **(b) Alpha particle (He^{2+})** (c) Neutron (d) Proton

24) Calculate the wavelength (in nanometer) associated with a proton moving at 1.0 x 10^3ms' _____.(Mass of proton = 1.67 x 10^{-27} kg and h = 6.63 x 10^{-34}Js)

(a) 0.032 nm **(b) 0.40 nm** (c) 2.5 nm (d) 14.0 nm

25) Which of the following is responsible to rule out the existence of definite paths or trajectories of electrons?

(a) Pauli's exclusion principle **(b) Heisenberg's uncertainty principle**

(c) Hund's rule of maximum multiplicity (d) Aufbau principle