Atomic structure

91 A dye emits 50% of the absorbed energy as fluorescence. If the number of quanta absorbed and emitted out is in the ratio 1:2 and it absorbs the radiation of wavelength 'x' Å, then the wavelength of the emitted radiation will be

(a) x Å
(b) $0.5\,x$ Å
(c) $4x$ Å
(d) $0.25\,x$ Å

92 An electron revolving round H-nucleus in ground state absorbs 10.2 eV energy. Its angular momentum increases by

(a) $\frac{h}{2\pi}$
(b) $\frac{h}{\pi}$
(c) $\frac{2h}{\pi}$
(d) $\frac{h}{4\pi}$

93 What is the orbit number of the He^+ ion in which electron have speed $\frac{1}{205.67}$ times the speed of light?

(a) 1
(b) 2
(c) 3
(d) 4

94 The ratio of spacing between the third and fourth orbit to the spacing between sixth and seventh orbit of H–atom is

(a) 7:13
(b) 13:7
(c) 16:49
(d) 1:1

95 The ratio of circumference of third and second orbits of He^+ ion is

(a) 3:2 (b) 2:3
(c) 9:4 (d) 4:9

96 The angular momentum of electron revolving in the second orbit of H-atom is 'x' J·s. The angular momentum of electron in the second orbit of He^+ ion should be

(a) x J·s (b) $2x$ J·s
(c) $0.5x$ J·s (d) $4x$ J·s

97 The force of attraction on electron by the nucleus is directly proportional to

(a) $\frac{n^3}{Z^4}$ (b) $\frac{Z^3}{n^4}$
(c) $\frac{n^4}{Z^2}$ (d) $\frac{Z^2}{n^4}$

98 An electron is revolving round the nucleus of He^+ ion with speed 2.188×10^6 m/s. The potential energy of the electron is

(a) –13.6 eV (b) –6.8 eV
(c) –27.2 eV (d) Zero

99 . What is the frequency of the second line of the Paschen series in the spectrum of He^+ ion?

(a) $\frac{64\ R.C}{225}$ (b) $\frac{64\ R}{225}$
(c) $\frac{225}{64\ R}$ (d) $\frac{225\ C}{64\ R}$

৭।৩ The ionization energy of He^+ ion is x eV. The ionization energy of Be^{3+} ion should be

(a) $4x$ eV (b) $2x$ eV

(c) $\frac{x}{4}$ eV (d) $\frac{x}{2}$ eV