Date Planned : __ / __ / __	Daily Tutorial Sheet - 1	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 1	Exact Duration :_____

1. Compared to the mass of lightest nuclei, the mass of an electron is only (approx.)

(A) 1/80 **(B)** 1/800 **(C)** 1/1836 **(D)** 1/2800

2. Which of the following is isoelectronic with carbon atom?

(A) N^+ **(B)** O^{-2} **(C)** Na^+ **(D)** Al^{3+}

3. Which of the following pair is isodiaphers ?

(A) ${}^{14}_{6}C$ and ${}^{23}_{11}Na$ **(B)** ${}^{24}_{12}Mg$ and ${}^{23}_{11}Na$

(C) ${}^{4}_{2}He$ and ${}^{16}_{8}O$ **(D)** ${}^{12}_{6}C$ and ${}^{15}_{7}N$

4. The ratio of e/m, i.e., specific charge for a cathode ray:

(A) has the smallest value when the discharge tube is filled with H_2

(B) is constant

(C) varies with the atomic number of gas in the discharge tube

(D) varies with the atomic number of an element forming the cathode

5. In photoelectric effect, the number of photoelectrons emitted is proportional to:

(A) intensity of incident beam **(B)** frequency of incident beam

(C) wavelength of incident beam **(D)** All of the above

6. Einstein's photoelectric equation states that: $E_k = h\nu - \phi$

Here, E_k refers to:

(A) Kinetic energy of all ejected electrons

(B) Mean kinetic energy of emitted electrons

(C) Minimum kinetic energy of emitted electrons

(D) Maximum kinetic energy of emitted electrons

7. The maximum kinetic energy of the photoelectrons is found to be 6.63×10^{-19} J , when the metal is irradiated with a radiation of frequency 2×10^{15} Hz. The threshold frequency of the metal is about :

(A) 1×10^{15} s **(B)** $1 \times 10^{15}\ s^{-1}$ **(C)** $2.5 \times 10^{15}\ s^{-1}$ **(D)** $4 \times 10^{15}\ s^{-1}$

8. Bohr's theory is applicable to:

(A) He **(B)** Li^{2+} **(C)** He^{2+} **(D)** None of these

9. If r is the radius of first orbit, the radius of n^{th} orbit of the H atom will be:

(A) $r\,n^2$ **(B)** $r\,n$ **(C)** $\frac{r}{n}$ **(D)** $r^2 n^2$

10. The principal quantum number of H-atom orbital, if the energy of e^- is –3.4 eV , will be:

(A) 1 **(B)** 2 **(C)** 3 **(D)** zero

11. Which of the following electronic transition in hydrogen atom will emit largest amount of energy?

(A) From n = 2 to n = 1 **(B)** From n = 3 to n = 2

(C) From $n = \infty$ to n = 1 **(D)** From n = 5 to n = 3

12. The mass of an electron is m, its charge is e and it is accelerated from rest through a potential difference, V. The velocity of electron can be calculated by formula:

(A) $\sqrt{\frac{V}{m}}$ **(B)** $\sqrt{\frac{eV}{m}}$ **(C)** $\sqrt{\left(\frac{2eV}{m}\right)}$ **(D)** None of these

13. If the shortest wavelength of H-atom in Lyman series is x, the longest wavelength in Balmer series of He^+ is:

(A) $\frac{36x}{5}$ **(B)** $\frac{5x}{9}$ **(C)** $\frac{x}{4}$ **(D)** $\frac{9x}{5}$

14. According to Bohr's theory, the angular momentum of an electron in 5^{th} orbit is:

(A) $25\frac{h}{\pi}$ **(B)** $1\frac{h}{\pi}$ **(C)** $10\frac{h}{\pi}$ **(D)** $2.5\frac{h}{\pi}$

15. If the energy difference between the ground state of an atom and in excited state is 4.4×10^{-14} J, the wavelength of photon required to produce the transition is:

(A) 2.26×10^{-12} m **(B)** 1.13×10^{-12} m

(C) 4.52×10^{-16} m **(D)** 4.52×10^{-12} m