

Date Planned : __ / __ / __	Daily Tutorial Sheet - 10	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 2	Exact Duration : _____

- 116.** A photon was absorbed by a hydrogen atom in its ground state and the electron was promoted to the fifth orbit. When the excited atom returned to its ground state, visible and other quanta were emitted. Other quanta are:
- (A) $2 \rightarrow 1$ (B) $5 \rightarrow 2$ (C) $3 \rightarrow 1$ (D) $4 \rightarrow 1$
- 117.** Of the following, radiation with maximum wavelength is:
- (A) UV (B) Radio wave (C) X-ray (D) IR
- 118.** Zeeman effect explain splitting of lines in:
- (A) Magnetic field (B) Electric field
(C) Both (D) None
- 119.** Which of the following statement is not true about electromagnetic waves?
- (A) Are transverse in nature (B) Are produced by accelerating charges
(C) Travel with the same speed in all media (D) Travel in free space with speed of light
- *120.** Which of the following orbitals has/have zero probability of finding the electron in xy -plane?
- (A) p_z (B) d_{yz} (C) d_{zx} (D) p_x
- 121.** If Hund's rule is not followed, magnetic moment of Fe^{+2} , Mn^+ and Cr all having 24 electrons will be in the order :
- (A) $\text{Fe}^{2+} < \text{Mn}^+ < \text{Cr}$ (B) $\text{Fe}^{2+} = \text{Cr} < \text{Mn}^{+2}$
(C) $\text{Fe}^{+2} = \text{Mn}^+ < \text{Cr}$ (D) $\text{Mn}^+ = \text{Cr} < \text{Fe}^{+2}$
- 122.** The orbital angular momentum of an electron in 2s orbital is:
- (A) $+\frac{1}{2} \frac{h}{2\pi}$ (B) zero
(C) $\frac{h}{2\pi}$ (D) $\sqrt{2} \frac{h}{2\pi}$
- 123.** Number of electrons that F ($Z = 9$) has in p-orbitals is equal to:
- (A) number of electrons in s-orbitals in Na
(B) number of electrons in d-orbitals in Fe^{3+}
(C) number of electrons in d-orbitals in Mn
(D) (A), (B) and (C) true
- 124.** The first emission line in the atomic spectrum of hydrogen in the Balmer series appear at
- (A) $\frac{9R_H}{400} \text{cm}^{-1}$ (B) $\frac{7R_H}{144} \text{cm}^{-1}$ (C) $\frac{3R_H}{4} \text{cm}^{-1}$ (D) $\frac{5R_H}{36} \text{cm}^{-1}$
- 125.** Which orbital gives an electron a greater probability of being found close to the nucleus?
- (A) 3p (B) 3d (C) 3s (D) equal