Date Planned : __ / __ / __	Daily Tutorial Sheet - 3	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Advanced (Archive)	Exact Duration :_____

30. The wavelength of a spectral line for an electronic transition is inversely related to: **(1988)**

(A) the number of electron undergoing the transition

(B) the nucleus charge of the atom

(C) the difference in the energy of the energy levels involved in the transition

(D) the velocity of the electron undergoing the transition

31. The correct set of quantum numbers for the unpaired electron of chlorine atom is : **(1989)**

	n	ℓ	m		n	ℓ	m
(A)	2	1	0	**(B)**	2	1	1
(C)	3	1	1	**(D)**	3	0	0

32. The correct ground state electronic configuration of chromium atom is : **(1989)**

(A) $[Ar]3d^5 4s^1$ **(B)** $[Ar]3d^4 4s^2$ **(C)** $[Ar]3d^6 4s^0$ **(D)** $[Ar]4d^5 4s^1$

33. Which of the following does not characterise X-rays ? **(1992)**

(A) The radiation can ionise gases

(B) It causes ZnS to fluoresence

(C) Deflected by electric and magnetic fields

(D) Have wavelengths shorter than ultraviolet rays

34. Wave function of electrons in atoms and molecules are called _____. **(1993)**

35. The $2p_x$, $2p_y$ and $2p_z$ orbitals of atom have identical shapes but differ in their _____. **(1993)**

36. In a given electric field, β-particles are deflected more than α-particles in spite of α-particles having larger charge. **(1993)**

37. The outermost electronic configuration of Cr _____. **(1994)**

38. A 3p orbital has **(1995)**

(A) two non spherical nodes

(B) two spherical nodes

(C) one spherical and one non-spherical node

(D) one spherical and two non-spherical nodes

39. Which of the following relates to photons both as wave motion and as a stream of particles ? **(1995)**

(A) Interference **(B)** $E = mc^2$ **(C)** Diffraction **(D)** $E = h\nu$

40. The orbital angular momentum of an electron in 3s-orbital is : **(1996)**

(A) $+\frac{1}{2}\cdot\frac{h}{2\pi}$ **(B)** zero **(C)** $\frac{h}{2\pi}$ **(D)** $\sqrt{2}\cdot\frac{h}{2\pi}$

41. Which of the following has the maximum number of unpaired electrons? **(1997)**

(A) Mg^{2+} **(B)** Ti^{3+} **(C)** V^{3+} **(D)** Fe^{2+}

42. For a d-electron, the orbital angular momentum is : **(1997)**

(A) $\sqrt{6}\left(\frac{h}{2\pi}\right)$ **(B)** $\sqrt{2}\left(\frac{h}{2\pi}\right)$ **(C)** $\left(\frac{h}{2\pi}\right)$ **(D)** $2\left(\frac{h}{2\pi}\right)$

43. The first use of quantum theory to explain the structure of atom was made by: **(1997)**

(A) Heisenberg **(B)** Bohr **(C)** Planck **(D)** Einstein

44. The uncertainly principle and the concept of wave nature of matter were proposed by _____ and _____ respectively. **(1998)**

***45.** Which of the following statement (s) is (are) correct? **(1998)**

(A) The electronic configuration of Cr is $\left[\mathrm{Ar}\right]3\mathrm{d}^5\,4\mathrm{s}^1$ (atomic number of Cr = 24)

(B) The magnetic quantum number may have a negative value

(C) In silver atom, 23 electrons have a spin of one type and 24 of the opposite type. (atomic number of Ar = 47)

(D) The oxidation state of nitrogen in NH_3 is +3