Date Planned : __ / __ / __	Daily Tutorial Sheet - 4	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 1	Exact Duration :_____

46. The wave nature of electron is verified by

(A) de-Broglie **(B)** Davisson and Germer

(C) Rutherford **(D)** All of these

47. The uncertainty in momentum of an electron is 1×10^{-5} kg m / s . The uncertainty in its position will be $\left(h = 6.62 \times 10^{-34} \text{ kg m}^2 / \text{s}\right)$

(A) 2.36×10^{-28} m **(B)** 5.25×10^{-28} m

(C) 2.27×10^{-30} m **(D)** 5.27×10^{-30} m

48. The two electrons in sub-shell of K-shell will differ in:

(A) Principal quantum number **(B)** Azimuthal quantum number

(C) Magnetic quantum number **(D)** Spin quantum number

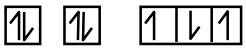
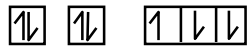
49. The number of orbitals and subshells present in the shell with n = 4 is:

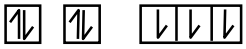
(A) 8, 2 **(B)** 16, 4 **(C)** 18, 3 **(D)** 32, 5

50. The number of electrons in the valence shell of calcium is:

(A) 2 **(B)** 4 **(C)** 6 **(D)** 8

51. The ground state electronic configuration of nitrogen atom can be represented as:

(A)  **(B)** 

(C)  **(D)** All of the above

52. How many unpaired electrons are present in Ni^{2+} cation? (At. No. = 28)

(A) 0 **(B)** 2 **(C)** 4 **(D)** 6

53. An electron, a proton and an alpha particle have KE of 16E, 4E and E respectively. What is the qualitative order of their de-Broglie wavelengths?

(A) $\lambda_e > \lambda_p > \lambda_\alpha$ **(B)** $\lambda_p = \lambda_\alpha > \lambda_e$

(C) $\lambda_p < \lambda_e < \lambda_\alpha$ **(D)** $\lambda_\alpha > \lambda_e > \lambda_p$

54. Which of the following sets of quantum numbers represents the highest energy of an atom?

(A) n = 3, l = 1, m = 1, s = +1/2 **(B)** n = 3, l = 2, m = 1, s = +1/2

(C) n = 4, l = 0, m = 0, s = +1/2 **(D)** n = 3, l = 0, m = 0, s = +1/2

55. The number of radial nodes of 3s and 2s orbital are respectively:

(A) 2, 1 **(B)** 0, 2 **(C)** 1, 2 **(D)** 2, 11

56. In hydrogen atom an orbit has a diameter of about 16.92 Å, what is the maximum number of electrons that can be accommodated in that orbit.

(A) 8 **(B)** 32 **(C)** 50 **(D)** 72

57. The number of waves in n^{th} orbit are:

(A) n^2 **(B)** n **(C)** n – 1 **(D)** n – 2

58. The magnitude of the spin angular momentum of an electron is given by:

(A) $S=\sqrt{s(s+1)}\,\frac{h}{2\pi}$ **(B)** $S = s\frac{h}{2\pi}$

(C) $S = \frac{3}{2}\times\frac{h}{2\pi}$ **(D)** None of these

59. Which of the following sets of quantum number is INCORRECT?

(I) $n = 5, l = 4, m = 0, s = +\frac{1}{2}$ **(II)** $n = 3, l = 3, m = +3, s = +\frac{1}{2}$

(III) $n = 6, l = 0, m = +1, s = -\frac{1}{2}$ **(IV)** $n = 4, l = 2, m = +2, s = 0$

(A) II, IV **(B)** I, II, III **(C)** II, III, IV **(D)** I, III

60. The correct set of four quantum numbers for outermost electron of potassium (Z = 19) is:

(A) $4, 1, 0, \frac{1}{2}$ **(B)** $3, 1, 0, \frac{1}{2}$ **(C)** $4, 0, 0, \frac{1}{2}$ **(D)** $3, 0, 0, \frac{1}{2}$