

Date Planned : __ / __ / __	Daily Tutorial Sheet - 5	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 1	Exact Duration : _____

61. A body of mass  $x$  kg is moving with a velocity of  $100 \text{ ms}^{-1}$ . Its de-Broglie wavelength is  $6.62 \times 10^{-35} \text{ m}$ .  
Hence,  $x$  is: ( $h = 6.62 \times 10^{-34} \text{ Js}$ )  
**(A)** 0.1 kg      **(B)** 0.25 kg      **(C)** 0.15 kg      **(D)** 0.2 kg
62. The values of four quantum number of valence electron of an element are  $n = 4$ ,  $l = 0$ ,  $m = 0$  and  $s = +\frac{1}{2}$ . The element is:  
**(A)** K      **(B)** Ti      **(C)** Na      **(D)** Sc
63. The orbital angular momentum of an electron in a d-orbital is:  
**(A)**  $\sqrt{6} \frac{h}{2\pi}$       **(B)**  $\sqrt{2} \frac{h}{2\pi}$       **(C)**  $\frac{h}{2\pi}$       **(D)**  $\frac{2h}{2\pi}$
64. de-Broglie wavelength of electron in  $2^{\text{nd}}$  excited state of hydrogen atom is: [where  $r_0$  is the radius of  $1^{\text{st}}$  orbit in H-atom]  
**(A)**  $r_0$       **(B)**  $\pi r_0$       **(C)**  $3\pi r_0$       **(D)**  $6\pi r_0$
65. The H-spectrum show:  
**(A)** Heisenberg's uncertainty principle      **(B)** Diffraction  
**(C)** Polarisation      **(D)** Presence of quantized energy level
66. Electrons will first enter into which set of quantum numbers- $n = 5$ ,  $l = 0$  or  $n = 3$ ,  $l = 2$   
**(A)**  $n = 5$ ,  $l = 0$       **(B)** both possible      **(C)**  $n = 3$ ,  $l = 2$       **(D)** data insufficient
67. Which of the following configurations is incorrect?  
**(A)**  $1s^2 2s^2 2p_x^2 2p_y^2 2p_z^0$       **(B)**  $1s^2 2s^2 2p_x^1 2p_y^1$   
**(C)**  $1s^2 2s^2 2p_x^1 2p_y^1 2p_z^1$       **(D)**  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$
68. Which of the following set of quantum numbers is an impossible arrangement?  
**(A)**  $n = 3$ ,  $m = -2$ ,  $s = +1/2$       **(B)**  $n = 4$ ,  $m = 3$ ,  $s = +1/2$   
**(C)**  $n = 5$ ,  $m = 2$ ,  $s = -1/2$       **(D)**  $n = 3$ ,  $m = -3$ ,  $s = -1/2$
69. Which of the following sets of quantum numbers is not possible?  
**(A)**  $n = 4$ ,  $l = 1$ ,  $m = 0$ ,  $s = +1/2$       **(B)**  $n = 4$ ,  $l = 3$ ,  $m = -3$ ,  $s = -1/2$   
**(C)**  $n = 4$ ,  $l = -1$ ,  $m = +2$ ,  $s = -1/2$       **(D)**  $n = 4$ ,  $l = 1$ ,  $m = 0$ ,  $s = -1/2$
70. A cricket ball of 0.5 kg is moving with a velocity of  $100 \text{ ms}^{-1}$ . The wavelength associated with its motion is :  
**(A)**  $1/100 \text{ cm}$       **(B)**  $66 \times 10^{-34} \text{ m}$   
**(C)**  $1.32 \times 10^{-35} \text{ m}$       **(D)**  $6.6 \times 10^{-28} \text{ m}$
71. The set of quantum numbers not applicable to an electron: ( $n$ ,  $l$ ,  $m$ ,  $s$ )  
**(A)** 1, 1, 1,  $+1/2$       **(B)** 1, 0, 0,  $+1/2$       **(C)** 1, 0, 0,  $-1/2$       **(D)** 2, 0, 0,  $+1/2$

**Paragraph for Question No. 72 - 75**

A neutral atom of an element has 2K, 8L, 9M and 2N electrons.

- 72.** The atomic number of element is:  
(A) 20 (B) 21 (C) 22 (D) 23
- 73.** The total number of s electrons are:  
(A) 8 (B) 6 (C) 4 (D) 10
- 74.** The total number of p-electrons are:  
(A) 6 (B) 12 (C) 18 (D) 24
- 75.** The total number of d-electrons are:  
(A) 1 (B) 2 (C) 3 (D) 4