

## DPP

DAILY PRACTICE PROBLEMS

CLASS : XI<sup>th</sup>  
DATE :

SUBJECT : CHEMISTRY  
DPP No. : 3

### Topic :- STRUCTURE OF ATOM

- The energy of an electron in first Bohr orbit of H-atom is  $-13.6$  eV. The possible energy value of electron in the excited state of  $\text{Li}^{2+}$  is  
 a)  $-122.4$  eV      b)  $30.6$  eV      c)  $-30.6$  eV      d)  $13.6$  eV
- When the azimuthal quantum number has the value of 2, the number of orbitals possible are  
 a) 7      b) 5      c) 3      d) 0
- Compared to the lightest atom the heaviest atom weighs:  
 a) 200 times      b) 238 times      c) 92 times      d) 16 times
- If the following particles travel with equal speed, then for which particle the wavelength will be longest?  
 a) Proton      b) Neutron      c)  $\alpha$ -particle      d)  $\beta$ -particle
- The orbital cylindrically symmetrical about  $x$ -axis is:  
 a)  $p_z$       b)  $p_y$       c)  $p_x$       d)  $d_{xz}$
- The orbital with maximum number of possible orientations is:  
 a)  $s$       b)  $p$       c)  $d$       d)  $f$
- Einstein's photoelectric equation states that  $E_k = h\nu - W$   
 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
- The orbital closest to the nucleus is:  
 a)  $7s$       b)  $3d$       c)  $6p$       d)  $4s$
- Isoelectronic pair among the following is  
 a) Ca and K      b) Ar and  $\text{Ca}^{2+}$       c) K and  $\text{Ca}^{2+}$       d) Ar and K
- We can say that the energy of a photon of frequency  $\nu$  is given by  $E = h\nu$ , where  $h$  is Planck's constant. The momentum of a photon is  $p = h/\lambda$ , where  $\lambda$  is the wavelength of photon. Then we may conclude that velocity of light is equal to:  
 a)  $(E/p)^{1/2}$       b)  $E/p$       c)  $Ep$       d)  $(E/p)^2$
- Uncertainty in position of a particle of 25 g in space is  $10^{-5}$  m. Hence, uncertainty in velocity ( $\text{ms}^{-1}$ ) is (Planck's constant  $h = 6.6 \times 10^{-34}$  Js)  
 a)  $2.1 \times 10^{-28}$       b)  $2.1 \times 10^{-34}$       c)  $0.5 \times 10^{-34}$       d)  $5.0 \times 10^{-24}$
- The mass of a neutron is of the order of:  
 a)  $10^{-23}$  kg      b)  $10^{-24}$  kg      c)  $10^{-26}$  kg      d)  $10^{-27}$  kg

13. The de Broglie wavelength of a 66 kg man skiing down Kufri Hill in Shimla at  $1 \times 10^3 \text{ m sec}^{-1}$  is:  
 a)  $1 \times 10^{-36} \text{ m}$       b)  $1 \times 10^{-37} \text{ m}$       c)  $1 \times 10^{-38} \text{ m}$       d)  $1 \times 10^{-39} \text{ m}$
14. The  $Z$  –component of angular momentum of an electron in an atomic orbital is governed by the  
 a) Magnetic quantum number      b) Azimuthal quantum number  
 c) Spin quantum number      d) Principal quantum number
15. An electron with values 4, 2,  $-2$  and  $+1/2$  for the set of four quantum numbers  $n, l, m_l$  and  $s$  respectively, belongs to  
 a) 4s-orbital      b) 4p-orbital      c) 4d-orbital      d) 4f-orbital
16. Consider the following statements :  
 1. Electron density in  $xy$  plane in  $3d_{x^2-y^2}$  orbital is zero  
 2. Electron density in  $xy$  plane in  $3d_{z^2}$  orbital is zero  
 3. 2s orbital has only one spherical node  
 4. For  $2p_z$  orbital  $yz$  is the nodal plane  
 The correct statements are  
 a) 2 and 3      b) 1,2,3,4      c) Only 2      d) 1 and 3
17. The maximum probability of finding electron in the  $d_{xy}$  orbital is:  
 a) Along the  $x$ -axis  
 b) Along the  $y$ -axis  
 c) At an angle of  $45^\circ$  from the  $x$ - and  $y$ -axes  
 d) At an angle of  $90^\circ$  from the  $x$ - and  $y$ -axes
18. Two electron in an atom of an element cannot have:  
 a) The same principle quantum number  
 b) The same azimuthal quantum number  
 c) The same magnetic quantum number  
 d) An identical set of quantum numbers
19. The energy of electromagnetic radiation depends on:  
 a) Amplitude and wavelength  
 b) Wavelength  
 c) Amplitude  
 d) Temperature of medium through which it passes
20. Correct electronic configuration of  $\text{Cu}^{2+}$  is:  
 a)  $[\text{Ar}]3d^8, 4s^1$       b)  $[\text{Ar}]3d^{10}, 4s^2 4p^1$       c)  $[\text{Ar}]3d^{10}, 4s^1$       d)  $[\text{Ar}]3d^9$