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**Max Time : 1 hr** **Class = 11th Chemistry Test**  **Max Marks : 25**

**STRUCTURE OF ATOM**

1. Multiple choice questions : [ 1 X 5 = 5]
2. Which of the following series of transitions in the spectrum of hydrogen falls in visible region?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Brackett series | b) Lyman series | c) Balmer series | d) Paschen series |

1. In hydrogen spectrum, the third line from the red end corresponds to which one of the following inter-orbit jumps of the electron for Bohr orbits in an atom of hydrogen?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 5 2 | b) 4 1 | c) 2 5 | d) 3 2 |

1. The energies E1 and E2 of two radiations are 25 eV and 50 eV respectively. The relation between their wavelengths i.e. and will be :

|  |  |  |  |
| --- | --- | --- | --- |
| a) = ½ | b) = | c) = 2 | d) = 4 |

1. The one electron species having ionization energy of 54.4 eV is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) H | b) He+ | c) B4+ | d) Li2+ |

1. The de-Broglie wavelength associated with a ball of mass 1 kg having kinetic energy 0.5 J is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) 6.626 x 10 – 34 m | b) 13.20 x 10 – 34 m | c) 10.38 x 10 – 21 m | d) 6.626 x 10 – 33 |

1. Which of the following orbitals are degenerate? 3 , 4 , 3 , 3 , 4 , 4 [ 1 ]
2. Calculate the total number of angular nodes and radial nodes present in 3p orbital. [ 1 ]
3. What is the relationship between wavelength and momentum of a particle? [ 1 ]
4. What is the maximum probability for an electron to be present within the atomic orbital? [ 1 ]
5. What is the first energy level containing f-orbitals? [ 1 ]
6. What will be the wavelength of oxygen molecule in Pico meters moving with a velocity of 660 m/sec.

[ 2 ]

1. An electron has a speed of 500 m/s with an uncertainty of 0.02 %. What is the uncertainty in locating its position? [ 2 ]
2. Give the electronic configuration of the following ions : [ 2 ]

(a) Cu2+ (b) Cr3+ (c) Fe2+ and Fe3+  (d) H –  (e) S2 –

1. Calculate the wavelength of an electron moving with velocity of 2.05 x 107 m/s. [ 2 ]
2. The mass of an electron is 9.1 x 10 – 31 kg. If its K.E. is 3 x 10 – 25 J, calculate its wavelength. [ 2 ]
3. Among the following pairs of orbitals which will experience the larger effective nuclear charge?
4. 2s and 3s (b) 4d and 4f (c) 3d and 3p. [ 2 ]
5. Write down the quantum numbers n , l and m for the following orbitals : [ 3 ]

(a) (b) (c) (f)