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| **Answer key PT 2 (2023-24)** | | | | | |
| **Subject: CHEMISTRY**  **Grade: XI** | | Max. Marks:35Time:1Hr15mts | | | |
| **Name:** | | | **Section:** | **Roll No:** | |
|  | **SECTION A** | | | | |
| 1 | (d) | | | | 1 |
| 2 | (a) | | | | 1 |
| 3 | (b) | | | | 1 |
| 4 | (d) | | | | 1 |
| 5 | (c) | | | | 1 |
|  | **SECTION B** | | | |  |
| 6 | n=4, l=0, m=0, s = ½ | | | | 2 |
| 7 | 1. The wave character of the electron is not considered in Bohr model. 2. Ignores dual behavior of matter but also contradicts Heisenberg uncertainty principle. | | | | 2 |
| 8 | The orbitals having the same energy are called **degenerate. Eg :** | | | | 2 |
| 9 |  | | | | 2 |
| 10 | 1. 1s2 2s2 2p6 3s2 3p6 3d5 2. 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p5. | | | | 2 |
|  | **SECTION C** | | | |  |
| 11 | increment straight E space equals 2.18 space cross times space 10 to the power of negative 18 end exponent straight J space open square brackets 1 over 2 squared minus 1 over 5 squared close square brackets space space space space space space equals 2.18 space cross times 10 to the power of negative 18 end exponent straight J open square brackets 1 fourth minus 1 over 25 close square brackets space space space space space space equals 4.58 space cross times 10 to the power of negative 19 end exponent straight J  Also comma space increment straight E space equals space hv or space space space space space straight v space equals space fraction numerator increment straight E over denominator straight h end fraction therefore space space space space straight v space equals space fraction numerator 4.58 space cross times space 10 to the power of negative 19 end exponent straight J over denominator 6.62 space cross times 10 to the power of negative 34 end exponent Js end fraction space space space space space space space space space space equals space 6.91 space cross times 10 to the power of 14 straight s to the power of negative 1 end exponent Also comma space space space straight lambda space equals straight c over straight lambda space equals space fraction numerator 3.0 space cross times 10 to the power of 8 space ms to the power of negative 1 end exponent over denominator 6.91 space cross times 10 to the power of 14 straight s to the power of negative 1 end exponent end fraction space space space space space space space space space space space space space space equals space 434 space cross times space 10 to the power of negative 9 end exponent straight m space space space space space space space space space space space space space space equals space 434 space nm | | | | 3 |
| 12 | **Aufbau principle:** In the ground state of the atoms, the orbitals are filled in order of their increasing energies.  ii)**Pauli`s exclusion principle:** No two electrons in an atom can have the same set of four quantum numbers.  OR  No two electron can have the same spin in an orbital ”  iii)**Hund`s rule of maximum multiplicity:** pairing of electrons in the orbitals belonging to the same subshell (*p*, *d* or *f*) does not take place until each orbital belonging to that subshell has got one electron each i.e., it is singly occupied. | | | | 3 |
| 13 |  | | | | 3 |
| 14 | 1. Due to hyperconjugation 2. Nitro group is more electron withdrawing than chlorine. 3. Due to hyperconjugation | | | | 3 |
| 15 | (i)n (ii) m (iii) l (iv) n (v) s (vi) l | | | | ½ each |
|  | **SECTION D** | | | |  |
| 16 | 2. It states that it is impossible to determine simultaneously the exact position and exact momentum (or velocity) of an electron with great accuracy.   Mathematically, it can be given as in equation …  ∆x .∆p ≥ h/4π , ∆x .m∆v ≥ h/4π | | | | 1  1  1  1  1 |