Chemistry Theory Quiz-2 (01594 CHEMISTRY [J][Fall 21-22])

1. Find out TRUE if the statement is correct
(1 Point)

- ( ) An orbital is the most probable space in which the proton spends most of its time
- ( ) The Subsidiary quantum number governs the energies of electrons in an external magnetic field and gives orientation.
- (•) Electron has both matter and particle nature which is known as dual nature of matter
- ( ) The four quantum numbers of two electrons of an atom will be the same.

2. Electron occupies first lower energy orbits and then successively to higher level orbits'- this explains
(1 Point)

- ( ) Pauli's exclusion principle
- (•) Aufbau principle
- ( ) Heisenberg's uncertainty principle
- ( ) Hund's rule

3. Schrödinger's wave equation _____ (Multiple answer possible)
(1 Point)

- [ ] can be used to calculate the probability of finding proton
- [ ]

- [x] can be used to calculate the probability of finding electron
- [ ] is a standing sound wave equation
- [x] is a standing light wave equation

4. The_____ quantum number defines the shape of an atomic orbital occupied by the electrons.
(1 Point)

- ( ) Principal
- (•) Secondary
- ( ) Magnetic
- ( ) Spin

5. What designation is given to an orbital having n= 3, l=2 and n= 2, l=1?
(1 Point)

- ( ) 3s and 2s
- ( ) 3p and 2p
- (•) 3d and 2p
- ( ) 2p and 3p

6. Electronic configuration of nitrogen, 1s2 2s2 2px1 2py1 2pz1 is according to the rule or principle
(1 Point)

- (•) Hund's rule
- ( ) Aufbau principle
- ( ) Pauli's exclusion principle
- ( ) Heisenberg's principle

7. Which group elements are called transition metals?
(1 Point)

- Group number 1 to 2
- Group number 13 to 18
- Group number 3 to 12
- Group number 1 to 8

8. According to ..... "The four quantum numbers of two electrons of an atom will never be same".
(1 Point)

- Bohr Model
- Aufbau Principle
- Hund's Rule
- Pauli's Exclusion Principle

9. According to Louis de Broglie's modern wave mechanical concept, the momentum of a particle in motion is inversely proportional to _____
(1 Point)

- Speed
- Velocity
- Wavelength
- Wave number

10. The nucleus at which the electron density is zero is called ..... and the plane passing through the orbital-axis is called _____ plane.
(2 Points)

- Node, Plane

- Node, Nodal plane
- Nucleus, Node
- Nucleus, Plane

11. For an electron in 4d orbital, magnetic quantum number is _____.
(1 Point)

- -4, -3, -2, -1, 0, +1, +2, +3, +4
- -3, -2, -1, 0, +1, +2, +3
- -2, -1, 0, +1, +2
- -1, 0, +1

12. What happens to the electropositive character of elements on moving from left to right in a periodic table?
(1 Point)

- Increase
- Decreases
- First increases than decreases
- First decreases than increases

13. which ones are correct (Multiple answer possible)
(1 Point)

- [x] s-block elements have valence configuration s1 or s2.
- [x] p-block elements have valence configuration s2p1 to s2p6.
- [x] d-block elements have valence configurations in which d-subshells are being filled.
- [ ] none

14. Calculate the uncertainty in position of an electron if the uncertainty in velocity is 5.7 x 105 msec-1
(2 Points)

- 6.6 x 10-27m
- 1×10-10 m
- 6.6 x 10-34 m
- 5. x 10-10 m

15. Which of the following does not decrease while moving down the group of the periodic table?
(1 Point)

- Atomic radius
- Metallic character
- Number of shells in the atom
- Valence electrons

16. It is impossible to simultaneously know both the _____ and momentum (mass-velocity) of an object as small as an electron.
(1 Point)

- Speed
- Velocity
- Position
- Force

17. The electronic configuration of an element M is 2, 8, 4. In modern periodic table, the element M is placed in
(1 Point)

- 4th group

- 2nd group
- 14th group
- 18th group

18. Which of the following is the most reactive element of the group 17? (1 Point)

- Oxygen
- Sodium
- Fluorine
- Magnesium