ATOMIC STRUCTURE - I

STD: XI | UNIT TEST | MARKS: 50
CODE: AX | TIME: 1 Hr

PART - I

CHOOSE THE CORRECT ANSWER: (10x1=10)

1. Protons and neutrons present in the nucleus are collectively known as
   (a) Atoms (b) x - particle (c) nucleons (d) mass number
2. When 3d orbital is complete, the new electron will enter the
   (a) 4p orbital (b) 4f orbital (c) 4s orbital (d) 4d orbital
3. The number of orbital in a d - sub-shell is
   (a) 7 (b) 2 (c) 3 (d) 5
4. 2p orbitals have:
   (a) n=1, l=2 (b) n=2, l=0 (c) n=2, l=1 (d) n=1, l=0
5. When the value of azimuthal quantum number is 2, the magnetic quantum number can have vales
   (a) +1,-1 (b) +1, 0,-1 (c) -3,-2,-1, 0,1,2,3 (d) -2,-1, 0, 1, 2
6. The effect which represents the splitting of spectral lines by external magnetic field is
   (a) Zeeman effect (b) Stark effect (c) Raman Effect (d) none of these
7. For a 'p' subshell, the value of azimuthal quantum (l) number is.....
   (a) 1 (b) -1 (c) -2 (d) 2
8. Which of the following sets of quantum numbers are ~~not~~ allowable ?
   (a) n=2; l= -1; m=0; s=+1/2 (b) n=2; l= 2; m= -1; s=+1/2
   (c) n=2; l= 1; m=+1; s= -1/2 (d) n=3; l= -2; m=0; s= -1/2
9. Which of the following sets are possible quantum numbers of an electron in a 4f orbital?
   (a) n=4; l= 3; m= -4; s=+1/2 (b) n=4; l= 2; m= 0; s= -1/2
   (c) n=4; l= -2; m= -1; s= 1/2 (d) n=4; l= 3; m=-2; s= +1/2
10. In the order of increasing energy the orbitals are arranged as .....
    (a) 2s 1s 2p and 3s (b) 1s 2s 3s and 2p (c) 1s 2s 2p and 3s (d) 2p 1s 2s and 3s

PART - II

ANSWER ALL THE QUESTIONS: (10x3=30)

11. What is an orbital?
12. An atomic orbital has l=3. What are the possible values of m?
13. Give the electronic configuration of chromium. (Z=24)
14. Write short note about Thomson's model of atom.
15. State Heisenberg's uncertainty principle.
16. What is Zeeman Effect?
17. What is Stark effect?
18. State Pauli's exclusion principle.
19. State Hund's rule of maximum multiplicity.
20. State Aufbau principle.

PART - III

ANSWER ALL THE QUESTIONS (1x10=10)

21. Write notes on:
   (a) What is Rutherford's alpha ray scattering experiment? What are its conclusions?
   (b) What are the postulates of Bohr's Theory of atom?