

## CHAPTER 5 (Atomic structure)

### Short Questions:

1. Cathode rays are material in nature justify it.
2. Why it is important (necessary) to decrease the pressure in the discharge tube to get the cathode rays?
3. Why  $e/m$  of cathode rays is just equal to that of electron?
4. Give properties of positive rays.
5. Give reason for the production of positive rays.
6. Give any two properties of Neutron.
7. Write the nuclear reaction for the decay of neutron.
8. How neutron was discovered by Chadwick. Give nuclear equation involved.
9. Calculate mass of an electron when  $e/m = 1.7588 \times 10^{11} \text{C.Kg}^{-1}$   
**OR** Calculate mass of an electron from its  $e/m$  value.
10. What is Moseley's law?
11. How do you come to know that velocities of electrons in higher orbits are less than those in lower orbits of hydrogen atom?
12. Energy of an electron is inversely proportional to  $n^2$  but energies of higher orbits are always greater than those of the lower orbits. Justify it.
13. What is Plank's quantum theory?

**OR**

Write down any two postulates of Plank's Quantum theory.

14. State Heisenberg's uncertainty principle and give its equation.
15. Write down electronic configuration of **Fe** (26) and **Br** (35).
16. Write down electronic configuration of **P** (31) and **Cu** (29).
17. Write down electronic configuration of **Cr** (24).
18. What is difference between continuous spectrum and line spectrum?
19. Write two points in importance of Moseley's law.
20. What are the defects (draw backs) in the Rutherford's atomic model?
21. Justify that distance gaps between different orbitals go on increasing from the lower to higher orbit.
22. Define Zeeman's effect and Stark's effect.

**OR**

What is Zeeman's effect?

23. Differentiate between line spectrum and continuous spectrum.
24. State spin Quantum number briefly.
25. What is orbital? Discuss the shape of p-orbitals.
26. Calculate the number of electrons in s,p,d and f- sub shells from the formula and write separately.
27. State Pauli's exclusion principle.
28. State Pauli's exclusion principle and Hund's rule.
29. What is Hund's rule?

### Long Questions:

1. Define orbital. Discuss shapes of its two types.
2. Give defects of Bohr's atomic model.
3. Derive the formula for calculating the energy of an electron in nth orbit using Bohr's model.
4. Describe Millikan's oil drop method for the measurement of charge on electron.
5. Discuss magnetic and spin quantum numbers.
6. Write down the properties of cathode rays.
7. Define Quantum numbers. Discuss briefly Azimuthal quantum number.
8. How did Rutherford discover the nucleus of atom?
9. Write down four properties of Neutron.
10. Describe J.J Thomson's experiment for determining  $e/m$  value of electron.