

**UNIT- 3 – PERIODIC CLASSIFICATION OF ELEMENTS**

**I. Answer in brief (2/3 marks)**

1. Define Dobereiner triads.
2. Define modern periodic law.
3. What are iso electronic ions? Give examples.
4. What is effective nuclear charge?
5. What is periodic law?
6. Define law of octaves.
7. Magnesium loses electrons successively to form  $Mg^+$ ,  $Mg^{2+}$ , and  $Mg^{3+}$  ions. Which step will have the highest ionization energy and why?
8. Define electronegativity.
9. What is ionization energy?
10. How would you explain the fact that the second ionization potential is always higher than the first ionization potential?
11. What is screening effect?
12. Give the general electronic configuration of lanthanides and actinides.
13. Why halogens act as oxidizing agents?

**II. Answer in a paragraph (5 marks)**

1. Mention any two anomalous properties of second period elements.
2. Explain the Pauling method for the determination of ionic radius.
3. Explain the periodic trend of ionization potential.
4. Explain the diagonal relationship.
5. By using Pauling's method calculate the ionic radii of  $K^+$  and  $Cl^-$  ions in the potassium chloride crystal.  
Give that  $d_{K^+ - Cl^-} = 3.14 \text{ \AA}$ .
6. Briefly give the basis for Pauling's scale of electronegativity.
7. State the trends in the variation of electronegativity in group and periods.
8. Explain the following, give appropriate reasons.
  - (i) Ionisation potential of N is greater than that of O
  - (ii) First ionisation potential of C-atom is greater than that of B atom, whereas the reverse is true for second ionisation potential.
  - (iii) The electron affinity values of Be and Mg are almost zero and those of N (0.02eV) and P (0.80 eV) are very low