

Daily Tutorial Sheet-4 Level – 1

- **46.(A)** Fluorine exhibits only negative oxidation state of -1. Other halogens in addition to -1 oxidation state exhibit formal positive oxidation states.
- 47.(B) No. of elements in a period

If 
$$n = \text{even } \Rightarrow \left(\frac{n+2}{2}\right)^2 \times 2$$

If 
$$n = \text{odd} \Rightarrow \left(\frac{n+1}{2}\right)^2 \times 2$$

- **48.(C)** In a period, alkali metal has minimum nuclear charge and high atomic size. Thus, force of attraction is small in alkali metal.
- **49.(D)** Electronegativity is an average of *IE* and *EA*
- 50.(B) Along the period, E.N increases and down the group E.N decreases
- **51.(D)** Paramagnetic species have at least one unpaired electron. Write the electronic configuration and observe the unpaired orbital.

 $Na^{+}(11): 1s^{2}, 2s^{2}2p^{6}$  – All paired electrons;

 $Zn^{2+}(30): 1s^2, 2s^22p^6, 3s^23p^63d^{10}$  – All paired electrons:

 $Cu^{+}(29): 1s^{2}, 2s^{2}2p^{6}, 3s^{2}3p^{6}3d^{10}$  – All paired electrons:

 $Fe^{3+}(26): 1s^2, 2s^22p^6, 3s^23p^63d^5$  – Unpaired electrons

**52.(B)** Diamagnetic species have all paired electrons.

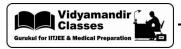
 $Cu^{2+}(29):1s^2,2s^22p^6,3s^23p^63d^2$  – Unpaired electrons

 $Cr^{3+}(24): 3s^2, 2s^22p^6, 3s^23p^63d^3$  – Unpaired electrons

 $\text{Co}^{3+}(27): 1\text{s}^2, 2\text{s}^2 2\text{p}^6, 3\text{s}^2 3\text{p}^6 3\text{d}^6$  - Unpaired electrons

 $Cd^{2+}; 1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^{10}, 4s^2 4p^6 4d^{10}$  – All paired electrons

- **53.(D)** Remember the following points:
  - (i) Alkali and alkaline earth metals are most electropositive. Alkali metals are more electropositive than alkaline earth metals.
  - (ii) In d-block series, the elements near alkaline earth metals are more electropositive than rest of the members.
  - (iii) Metalloids are less electropositive than metals.
  - (iv) Halogens (Non-metals) are least electropositive. In halogen group, electropositive character increases as atomic number increases.
- **54.(A)** In third period, 3s- and 3p-orbitals are filled. Total orbitals to be filled = one s + three p = 4. Thus, number of elements =  $4 \times 3 = 12$ .
- $\textbf{55.(D)} \quad \text{Allred-Rochow electronegativity value is given by } \chi^{AR} = \left(\frac{3590 \times Z_{eff}}{r^2_{covalent}}\right) + 0.744 \; .$



- **56.(D)** IE $_1$  < IE $_2$  < IE $_3$ . As after removing first electron =  $\left(\frac{Z}{e}\right)$  ratio increases so  $Z_{eff}$  increases so it becomes difficult to remove second electron. hence more energy is required and same is the case with removal of III $^{rd}$  electron.
- **57.(B)** Energy required = 178 + 348 = 526 Kcal/mol.
- **58.(B)**  $IE_5 >> IE_4$  i.e. it should be very difficult to remove fifth electron after removing four electrons from the element which will be only in the case of silicon.
- **59.(C)** Electronegativity increases across a period and it decreases down the group
- **60.(C)** B and D are noble gases.
  - Down the group, E.A decreases but due to small size of F, inter electronic repulsion makes its less stable as compared to Cl after accepting  $e^-$ .

Solution | Chemistry 134 Periodic Properties