

Electronegativity

(b) In HF, electronegativity difference is highest
 lonic character depends mainly on electronegativity difference (ΔΕΝ)
 between the two atoms.

 Δ EN(H–F) > Δ EN(H–CI) > Δ EN(H–Br) > Δ EN(H–I) Therefore, **HF** has the highest ionic character because **F** is the most electronegative element.

- **2.** (b) Decrease as atomic size increases.
- 3. (d) Bromine

Oxygen (O): $3.44 \ge 3.0$, Nitrogen (N): $3.04 \ge 3.0$, Chlorine (CI): $3.16 \ge 3.0$, Bromine (Br): 2.96 < 3.0

So, the element that does not have electronegativity ≥ 3.0 is:

- 4. (b) Electropositive nature increases down the group and decreases across the period.
- 5. (b) An atom with high electronegativity has high I.P.
- **6.** (a) If electronegativity difference is greater than 1.7 bond is ionic, if less than 1.7, the bond is covalent.
- **7.** (b) Due to decrease in hydration energy of cation and lattice energy remains almost unchanged.
- **8.** (a) *F*, because of its smallest size.
- **9.** (c) Because of small size and high nuclear charge.
- **10.** (a) Electronegativity decreases down the group.

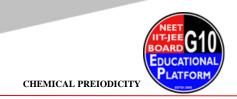




- 11. (c) Halogens are most electronegative.
- 12. (b) Electronegativity decreases down the group.
- 13. (d) Because of smallest size.
- **14.** (a) Electronegativity decreases down the group.
- 15. (c) Electronegativity
 - (a) Ionisation potential → Energy required to remove an electron from an atom. Not correct.
 - **(b) Electron affinity** → Energy released when an atom gains an electron. Related, but not exactly "in a molecule."
 - (c) Electronegativity → The ability of an atom in a molecule to attract shared electrons toward itself. Correct.
 - (d) Electronic attraction → Not a standard term in chemistry.
- 16. (a) Electronegativity increases since the size decreases.
- (b) Electropositive character decreases across the period as metallic character decreases.
- 18. (c) Si, P, S. As across the period electronegativity increases.
- 19. (a) Both electronegativity and electron affinity increases. This is because decrease in the size and increase in the nuclear charge. But electronegativity increases continuously.
- **20.** (a) Electropositive nature increases down the group.
- **21.** (d) Electropositive nature increases down the group.
- 22. (a) Attract electrons



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- 23. (d) The electronegative character increases as the size decreases.
- 24. (b) Electronegativity increases across a period.
- **25.** (a) $Li_3 1s^2 2s^1$ donates $1e^-$ easily.
- 26. (b) Electronegativity

This is exactly the definition of electronegativity.

Electron affinity → Energy change when an atom gains an electron (not necessarily in a bond).

lonisation energy → Energy to remove an electron.

Valence → Number of bonds an atom can form.

27. (c) Si, P, C, N

C (Carbon, period 2) \rightarrow 2.55. N (Nitrogen, period 2) \rightarrow 3.04, Si (Silicon, period 3) \rightarrow 1.90, P (Phosphorus, period 3) \rightarrow 2.19

Now arranging in increasing electronegativity:

- 28. (b) Electronegativity decreases down the group as atomic radius increases.
- 29. (b) Increases from carbon to fluorine

C (Carbon)
$$\rightarrow$$
 2.55, N (Nitrogen) \rightarrow 3.04, O (Oxygen) \rightarrow 3.44, F (Fluorine) \rightarrow 3.98

Clearly, the electronegativity increases steadily from $C \rightarrow N \rightarrow O \rightarrow F$.

- **30.** (a) Electronegativity increases across the period because size decreases.
- **31.** (b) Alkali metals are most electropositive and moreover, electropositive character increases down the group.





- **32.** (b) Electronegativity increases when moves towards period & decrease when moves toward group.
- **33.** (a) Electronegativity is the property of a bonded atom. The relative tendency on an atom to attract the shared pair of electron toward itself is called electronegativity.
- **34.** (a) Due to Raving small in size and electron defficient in nature it has highest polarising ability we can use Fazan's rule to understand it further.
- **35.** (d) With decrease in size from *AI* to *S* the basic nature of oxide decrease and acidic nature increases.

$$Al_2O_3 < SiO_2 < P_2O_3 < SO_2$$

 Al_2O_3 is amphoteric, SiO_2 is slightly acidic whereas P_2O_3 and SO_2 are the anhydrides of acids H_3PO_3 and H_2SO_3 .



