Electronegativity

1. **(b) In HF, electronegativity difference is highest**

Ionic character depends mainly on **electronegativity difference (ΔEN)** between the two atoms.

ΔEN(H–F) > ΔEN(H–Cl) > ΔEN(H–Br) > ΔEN(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 ≥ 3.0,**Nitrogen (N)**: 3.04 ≥ 3.0, **Chlorine (Cl)**: 3.16 ≥ 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.

17. (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

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).
Ionisation energy → Energy to remove an electron.
Valence → Number of bonds an atom can form.

27. **(c) Si, P, C, N**
C (Carbon, period 2) → 2.55. **N (Nitrogen, period 2)** → 3.04, **Si (Silicon, period 3)** → 1.90, **P (Phosphorus, period 3)** → 2.19

Now arranging in **increasing electronegativity**:
Si (1.90) < P (2.19) < C (2.55) < N (3.04)

28. (b) Electronegativity decreases down the group as atomic radius increases.

29. **(b) Increases from carbon to fluorine**
C (Carbon) → 2.55, **N (Nitrogen)** → 3.04, **O (Oxygen)** → 3.44, **F (Fluorine)** → 3.98

Clearly, the electronegativity **increases steadily from C → N → O → 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 *Al* 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.