Electron Affinity

1. **The property of an element that can be obtained indirectly from Born-Haber cycle is**

   1) Ionization potential

   2) Electron affinity

   3) Electro negativity

   4) Electropositive character

2. **Which of the following is an endothermic process?**

   1) First electron affinity of chlorine

   2) Second electron affinity of oxygen

   3) First electron affinity of magnesium

   4) Both 2 &3

3. **In a period from left to right, electron affinity**

   1) Increases with exceptions

   2) Decreases

   3) Remains constant

   4) Increases regularly

4. **Configuration that shows the highest energy released when an electron is added to the atom is**

   1) $1s^2 2s^2 2p^3$

   2) $1s^2 2s^2 2p^4$

   3) $1s^2 2s^2 2p^5$

   4) $1s^2 2s^2 2p^6$

5. **Electron affinity of Fluorine is less than that of Chlorine because**

   1) F has exceptionally small size

   2) Strong in electron repulsion in F

   3) Lower Bond dissociation energy of F_2

   4) Both 1 &2

6. **The chalcogen with highest electron affinity is**

   1) O   2) S   3) Se   4) Te

7. **The element with highest electron affinity in the following**

   1) Fluorine   2) Oxygen   3) Nitrogen   4) Chlorine

8. **Incorrect statement is**

    1) Alkali metals have the highest electron affinity.

    2) Greater the nuclear charge, greater is the electron affinity.

    3) The first electron affinity of Magnesium is positive.

    4) Chlorine has highest electron affinity.

9. **The electron affinity values of four elements A, B, C and D are respectively – 135, –60, –200 and –348 kJ mol^{-1}. The outer electronic configuration of element B is**

    1) $3s^2 3p^5$ 2) $3s^2 3p^4$ 3) $3s^2 3p^3$ 4) $3s^2 3p^2$|

10. **In which of the following process maximum energy is released**

    1) $O_{(g)} + e^- \rightarrow O^-_{(g)}$ 2) $O^-_{(g)} + e^- \rightarrow O^{-2}_{(g)}$

    3) $S_{(g)} + e^- \rightarrow S^-_{(g)}$ 4) $S^-_{(g)} + e^- \rightarrow S^{-2}_{(g)}$

11. **Ionization energy of F^- is equal in magnitude with the electron affinity of**

    1) F^- 2) F   3) F^+ 4) F^{2+}

12. **When an electron is added, energy is absorbed in which of the following?**

    1) P   2) N   3) Cl   4) S

13. **In Pauling's scale electro negativity of elements is obtained from**

    1) Electron affinity   2) Ionization potential   3) Both IP and EA   4) Bond energies

14. **Pauling's electro negativity values for elements are useful in predicting**

    1) Polarity of the molecules   2) Position in the periodic table

    3) Geometry of compounds   4) All of these

15. Electro negativity of a monovalent element is the average of its ionization energy and electron affinity according to

1) Pauling   2) Hund   3) Germer   4) Mulliken

16. Correct relation among X_A, X_B and Δ. Where X_A and X_B are the electro negativities of elements A and B.

1) $X_A + X_B = 0.208 \sqrt{\Delta}$ 2) $\sqrt{X_A - X_B} = 0.208 \times \Delta$

3) $X_A - X_B = 0.208 \sqrt{\Delta}$ 4) $X_A - X_B = \sqrt{0.208 \times \Delta}$

17. Reference element for Pauling's electro negativity is

1) H   2) C   3) Cl 4) He

18. The electro negativity values in Mulliken scale is how many times to those in Pauling scale

1) 0.28   2) 2   3) 2.8   4) 28

19. Electro negativity on Mulliken scale is limited to

1) Monovalent atoms only   2) Bivalent atoms only

3) Both 1 & 2   4) Multivalent atoms only

20. If I and E are ionization energy and electron affinity of an element in kJmole^{-1} electro negativity is given as

1) 2.8(I+E)   2) $\dfrac{I+E}{5.6}$ 3) $\dfrac{I+E}{2.8}$ 4) $\dfrac{I+E}{544}$

21. In a period electro negativity is lowest for

1) Chalcoge   2) Alkali metal   3) Inert gas   4) Halogen

22. Elements with high electro negativity are generally

1) Metals   2) Metalloids   3) Nonmetals   4) Soft solids

23. The correct order of electron affinity of the elements of oxygen family in the periodic table is

   1) O > S > Se   2) S > O > Se   3) S > Se > O   4) Se > O > S

24. Increasing order of the electro negativity of elements in the following

   1) C, N, Si, P   2) N, Si, C, P   3) Si, P, C, N   4) P, Si, N, C

25. Exothermic process in the following is

   1) $Na_{(g)} \rightarrow Na^+_{(g)} + e$

   2) $O^-_{(g)} + e \rightarrow O^{-2}_{(g)}$

   3) $N^{-2}_{(g)} + e \rightarrow N^{-3}_{(g)}$

   4) $O_{(g)} + e \rightarrow O^-_{(g)}$

26. The bond energies of H - H, X-X and H-X are 104, 60 and 102 k cal/mole. The electro negativity of Hydrogen is 2.1. Then the electro negativity of "X" is

   1) 2.5   2) 3.5   3) 3.0   4) 4.0

   Hint- $X_A - X_B = 0.208\sqrt{\Delta}$ $\Delta = E_{A\text{-}B} - 1/2\ [E_{A\text{-}A} + E_{B\text{-}B}]$

27. The ionization potential and electron affinity of an element "X" are 275 and 112 kcal/mole. Then the electro negativity of "X" according to Mulliken scale is

   1) 4.0   2) 3.5   3) 2.8   4) 3.0

   Hint- $EN = \dfrac{(IE\ in\ kcals/mole) + (EA\ in\ kcals/mole)}{129}$

28. If the E.N value of chlorine in the Pauling scale is 3.0, then the value in mulliken scale will be

   1) 11.2   2) 22.4   3) 8.4   4) 3.0

   Hint- Mulliken EN value=2.8 X Pauling EN values

KEY

1) 2 2)4 3) 1 4) 3 5)4 6) 2 7) 4 8) 1 9) 3 10) 3

11) 2 12) 2 13) 4 14) 1 15) 4 16) 3 17) 1 18) 3 19) 1 20) 4

21) 2 22) 3 23) 3 24) 3 25) 4 26) 3 27) 4 28)3