

Bond Characteristics

1. The O–H bond length in H_2O is xA^0 . The O–H bond length in H_2O_2 is

- 1) $< xA^0$ 2) xA^0 3) $> xA^0$ 4) $2x$

2. The C–C bond distance is largest in

- 1) C_2H_2 2) C_2H_4 3) $\text{C}_2\text{H}_2\text{Br}_2$ 4) C_2H_6

3. Bond polarity is least in

- 1) N–H 2) O–H 3) H–F 4) C–H

4. Bond energy is highest in the molecule

- 1) F_2 2) Br_2 3) I_2 4) Cl_2

5. Bond energy of C–C bond is highest in

- 1) $\text{H}_3\text{C}-\text{CH}_3$ 2) $\text{H}_2\text{C}=\text{CH}_2$ 3) $\text{CH}\equiv\text{CH}$ 4) $\text{C}_2\text{H}_5\text{Cl}$

6. Bond energy is highest in the overlapping

- 1) sp^3-s 2) sp^2-s 3) $sp-s$ 4) Equal in all

7. Bond energy is least in the following

- 1) HF 2) HCl 3) HBr 4) HI

8. The highest bond energy is in

- 1) $\begin{array}{c} | & | \\ -\text{C} & - & \text{C}- \\ | & | \end{array}$ 2) $\begin{array}{c} \cdot\cdot & \cdot\cdot \\ -\text{N} & - & \text{N}- \\ | & | \end{array}$ 3) $\begin{array}{c} \cdot\cdot & \cdot\cdot \\ -\text{O} & - & \text{O}- \\ \cdot\cdot & \cdot\cdot \end{array}$ 4) $\begin{array}{c} \cdot\cdot & \cdot\cdot \\ :\text{F} & - & \text{F}: \\ \cdot\cdot & \cdot\cdot \end{array}$

9. Which of the following has least bond energy?

- 1) F_2 2) H_2 3) N_2 4) O_2

17. Which of the following is more stable?

- 1) HF 2) HCl 3) HBr 4) HI

18. (A): Dinitrogen is chemically unreactive at ordinary temperature and is very Stable.

(R): The bond dissociation energy is more in N_2 molecule (1).

19. $C_2H_5Br + Q_1 \rightarrow C_2H_5\cdot + Br\cdot$

$C_2H_5Br + Q_2 \rightarrow C_2H_5^{(+)} + Br^{(-)}$,

Then relation between Q_1 & Q_2 is

- 1) $Q_1 > Q_2$ 2) $Q_1 < Q_2$
3) $Q_1 = Q_2$ 4) $Q_1 + Q_2 = 0$

20. In O_2 , H_2O_2 and O_3 , the correct order of 'oxygen-oxygen' bond length is

- 1) $O_2 > O_3 > H_2O_2$ 2) $O_3 > H_2O_2 > O_2$
3) $H_2O_2 > O_3 > O_2$ 4) $O_2 > H_2O_2 > O_3$

21. Bond length of H_2 is $0.074nm$, Bond length of Cl_2 is $1.98A^\circ$. Bond length of HCl is

- 1) $2.72A^\circ$ 2) $136pm$ 3) $1.027nm$ 4) $0.136A^\circ$

22. Energy required to dissociate 4gm of gaseous hydrogen in to free gaseous atoms is $208Kcal$ at $25^\circ C$. The bond energy of $H-H$ would be

- 1) $54 Kcal/mol$ 2) $104 Kcal/mol$ 3) $208 Kcal/mol$ 4) $20.8 Kcal/mol$

23. Average $C-H$ bond energy is $416 kJ.mol^{-1}$. Which of the following is correct? (2004)

- 1) $CH_4(g) + 416 kJ \rightarrow C(g) + 4H(g)$ 2) $CH_4(g) \rightarrow C(g) + 4H(g) + 416 kJ$
3) $CH_4(g) + 1664 kJ \rightarrow C(g) + 4H(g)$ 4) $CH_4(g) \rightarrow C(g) + 4H(g) + 1664 kJ$

24. The $C-H$ bond distance is shortest in

- 1) C_2H_2 2) C_2H_4 3) C_6H_6 4) C_2H_6

KEY

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

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

21) 2 22) 2 23) 3 24) 1 25) 3 26) 2 27) 3 28) 4 29) 2 30) 4

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