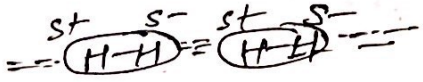
RACE NO (11) {Solutions}

Qu: 1 :-
Ansi [D]
Soln i



On time average the molecule is non polar but at the particular moment it act as a dipole which is equally probable in all directions.

Qu: (2) :- [Ansi- B]

Soln i only (B) option is given incorrect order of boiling point. The correct order of B.P. will be :-

$CH_4 < NH_3 < HF < H_2O$

Here extent of H-Bonding is maximum.

Qu: (3) ; [Ansi- D]

Soln i All the options are correct because of all the given factors are responsible for vander wool force of attractions.

Qu: 4 ; [Ansi A]

⇒ correct order of boiling point is :-

(A) $C_3H_8 > C_3F_8$;- It is correct ✓

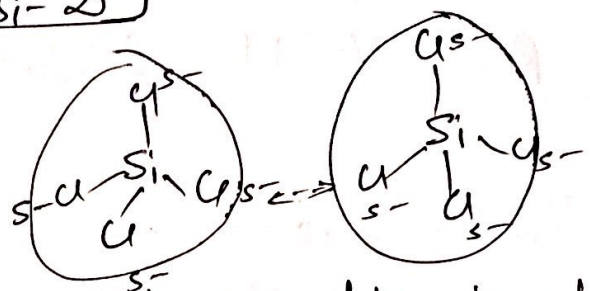
(B) neo-pentane > iso-pentane ;- Incorrect

(C) $T_2 < D_2$;- Incorrect

(D) $SbH_3 < NH_3$;- Incorrect

Qu: (5) :- [Ans:- 2]

Solution:-



Due to more difference in electronegativity b/w Si and Cl atoms, than C–Cl bond. the magnitude of negative charge develop at Chlorine atom in $SiCl_4$ is more & repulsive force is dominated than attractive force.

Qu: (6) :- [Ans: A, B, C, D]

Solution:- London force works in all kinds of molecules i.e. polar as well as non-polar molecules.

Qu: (7) :- [Ans:- A, C, D]

Soln:- The inter-molecular interaction energy is dependent on the r^{-6} (r = distance) :-

∝ dipole-dipole interaction (gaseous molecules)

∝ dipole - induced dipole molecules.

∝ Instaneous dipole-dipole induced dipole interaction

Qu: (8) : Ans: (B)

Solution: formation of clathrates is an example of dipole induced dipole interactions :-

If non polar molecule is smaller in size then it will be least polarisable & it has least tendency to form clathrate. Hence "He" has least for clathrate formation tendency.

Ans-9 (B)

A] B.pt of NMe_3 > NF_3 [Due to more mol. wt. of NMe_3 than NF_3]

A] NF_3 > NMe_3 —(X)

B] more is dipole moment more will be the dipole-dipole inbaction b/w the molecule. (✓)

c] [London dispersion force ∝ No. of e⁻s]
it is reverse in option 'c' —(X)

D] B.pt ∝ Mol. wt. ∝ v.f.
mol. wt of Hydride of carbon family increases as we go down the group.
so its B.pt should increase not decrease
hence option (D) is —(X)

Ans-10 - D

Nobel gases are non polar; on their liquification only London force acts.

{London force = Instantaneous dipole - Induced dipole}

A] Ion-dipole Inbaction —(X)
B] Dipole-Dipole Inbaction. —(X)
c] Dipole-Induced dipole inbaction. —(X)
D] Instantaneous dipole-Induced dipole inbaction. (✓)

Qu: (11) :- [Ans :- B]

Solution:

(P) Dissolution of alcohol + H_2O ⇒ Keesom force

(Q) Interaction between CO_2 molecules ⇒ ⇒ London force

(R) Solubility of NaCl + H_2O ⇒ Ion - dipole interaction

(S) Solubility of noble gas in water ⇒ ⇒ Debye force.