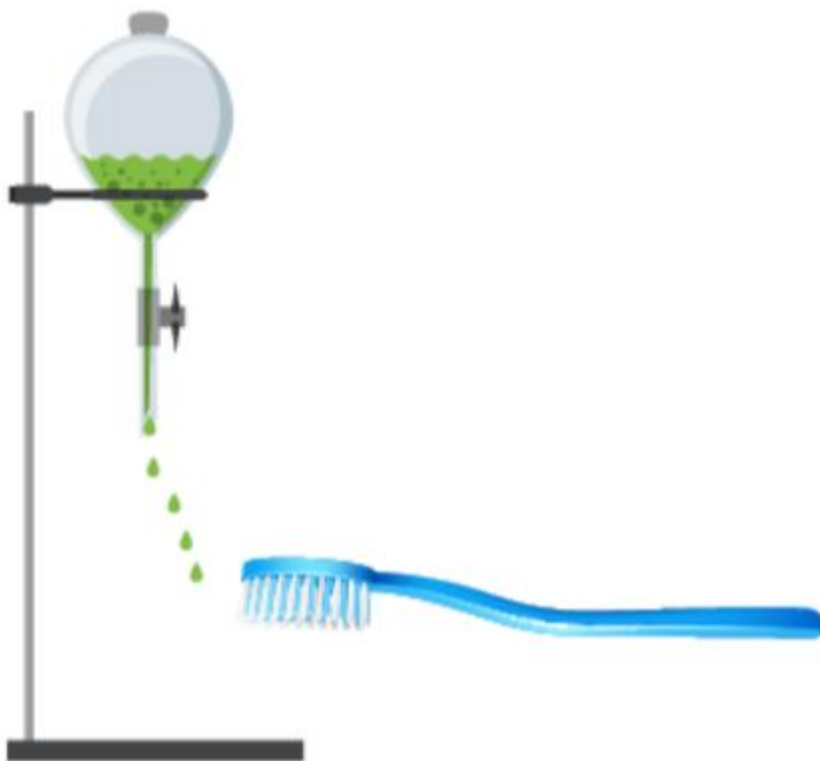


JEE Advanced Questions Based on Most Repeated Concepts of Chemical Bonding

Q: Consider the following compounds in the liquid form:

O_2 , HF , H_2O , NH_3 , H_2O_2 , CCl_4 , CHCl_3 , C_6H_6 , $\text{C}_6\text{H}_5\text{Cl}$

When a charged comb is brought near their flowing stream, how many of them show deflection as per the following figure?



Q: Among B_2H_6 , $\text{B}_3\text{N}_3\text{H}_6$, N_2O , N_2O_4 , $\text{H}_2\text{S}_2\text{O}_3$ and $\text{H}_2\text{S}_2\text{O}_8$, the total number of molecules containing covalent bond between two atoms of the same kind is_____.

Q: . Each of the following options contains a set of four molecules. Identify the option(s) where all four molecules possess permanent dipole moment at room temperature.

A. NO_2 , NH_3 , POCl_3 , CH_3Cl

B. BF_3 , O_3 , SF_6 , XeF_6

C. BeCl_2 , CO_2 , BCl_3 , CHCl_3

D. SO_2 , $\text{C}_6\text{H}_5\text{Cl}$, H_2Se , BrF_5

Q: The sum of the number of lone pairs of electrons on each central atom in the following species is.

$[\text{TeBr}_6]^{2-}$, $[\text{BrF}_2]^+$, SNF_3 and $[\text{XeF}_3]^-$

(Atomic numbers: N = 7, F = 9, S = 16, Br = 35, Te = 52, Xe = 54)

Q: Among the triatomic molecules/ions, BeCl_2 , N^{3-} , N_2O , NO^{+2} , O_3 , SCl_2 , ICl_2 , I^{3-} and XeF_2 , and XeF_2 , the total number of linear molecules(s)/ion(s) where the hybridization of the central atom does not have contribution from the d-orbital(s) is

[Atomic number: S = 16, Cl = 17, I = 53 and Xe = 54]

Q: A list of species having the formula XZ_4 is given below:

XeF_4 , SF_4 , SiF_4 , BF_4^- , BrF_4^- , $[\text{Cu}(\text{NH}_3)_4]^{2+}$, $[\text{FeCl}_4]^{2-}$, CoCl_4^{2-} and $[\text{PtCl}_4]^{2-}$

Defining shape on the basis of the location of X and Z atoms, the total number of species having a square planar shape is.

Q: Based on VSEPR theory, the number of 90 degrees F-Br-F angles in BrF_5 , is

Q: . The compound (s) with two lone pairs of electrons on the central atom is (are)

- A. BrF_5
- B. ClF_3
- C. XeF_4
- D. Sf_4

Q: Assuming 2s - 2p mixing is not operative the paramagnetic species among the following is:

- A. Be_2
- B. B_2
- C. C_2
- D. N_2

Q: Among H_2 , He^{2+} , Li_2 , Be_2 , B_2 , C_2 , N_2 , O^{2-} and F_2 , the number of diamagnetic species is
(Atomic numbers: H = 1, He = 2, Li = 3, Be = 4, B = 5, C = 6, N = 7, O = 8, F = 9)