

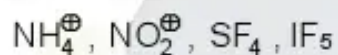
**PART : CHEMISTRY**

1. Find total number of electrons in p-orbitals of vanadium.

**Ans.** (12)

**Sol.**  ${}_{23}\text{V} = 1s^2 2s^2 2p^6 3s^2 3p^6 3d^3 4s^2$

2. Identify the correct sequence of hybridization of following species.



(1)  $sp^3$ ,  $sp$ ,  $sp^3d$ ,  $sp^3d^2$

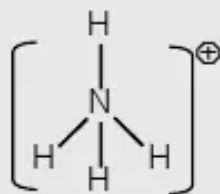
(2)  $sp^3$ ,  $sp^2$ ,  $sp^3d$ ,  $sp^3d^2$

(3)  $sp^3$ ,  $sp$ ,  $sp^3d$ ,  $sp^3d$

(4)  $sp^3$ ,  $sp^2$ ,  $sp^3d$ ,  $sp^3d$

**Ans.** (1)

**Sol.**  $\text{NH}_4^{\oplus}$



$sp^3$

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