DPP-02

SOLUTIONS

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1.

Orbitals		Type of bond (on y-axis)
(A) $p_z + p_z$	-	π-bond
(B) $p_x + p_x$	-	π-bond
(C) $p_x + p_y$	-	No bond formation

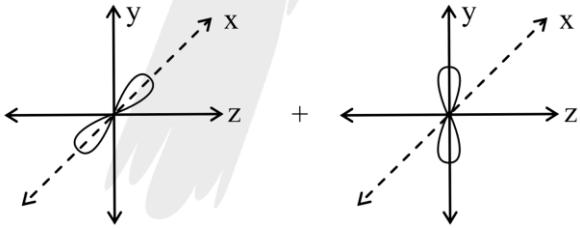
2. According to V.B.T. maximum 3-bonds (1σ & 2π) can be formed between two atoms.

3.

Orbitals		Type of bond
(A) 3d + 2p	-	π-bond
(B) 2p + 3p	-	σ or π
(C) 2p + 2p	-	σ or π
(D) 3p + 1s	-	σ only

4.

$N \equiv N$	$:C \leftleftharpoons O:$
$\sigma = 1$	$\sigma = 1$
$\pi = 2$	$\pi = 2$
$\sigma/\pi = 1/2$	$\sigma/\pi = 1/2$

5. 

⇒ overlapping not possible

6. σ-bond is stronger

7. s-orbital cannot form π-bond

8. Due to larger bond length, the bond dissociation energy of H_2Te is very low. Hence it is least thermally stable.

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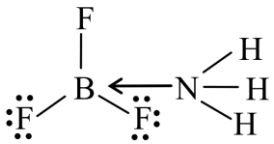
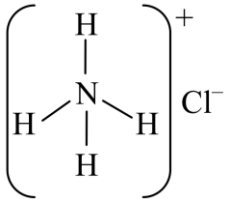
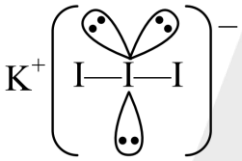
9.



- σ-covalent bond present
- coordinate bond present
- 3 lone pair present on F-atom
- σ-covalent bond present
- π-bond present
- coordinate bond present



- σ-covalent bond present
- ionic bond present
- coordinate bond present



- σ covalent bond present
- ionic bond present
- coordinate bond present
- 3lp present on I-atom

10.

Overlapping	Type of bond (on x-axis)
(i) $p_z + p_z$	π-bond
(ii) $p_x + p_x$	σ-bond
(iii) $p_x + p_y$	No bond formation
(iv) $s + p_z$	No bond formation
(v) $p_y + p_y$	π-bond