INORGANIC CHEMISTRY

DPP

DAILY PRACTICE PROBLEMS

DPP No. 10

Total Marks : 26

Max. Time : 26 min.

Topic : Chemical Bonding

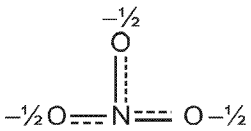
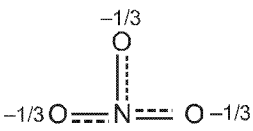
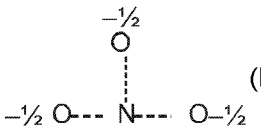
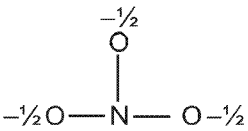
Type of Questions		M.M., Min.
Single choice Objective ('–1' negative marking) Q.1 to Q.6	(3 marks, 3 min.)	[18, 18]
Multiple choice objective ('–1' negative marking) Q.7 to Q.8	(4 marks, 4 min.)	[8, 8]

1. Resonating structures have different :

(A) Atomic arrangements (B) Electronic arrangements

(C) Functional groups (D) Sigma bond

2. Resonance hybrid of nitrate ion is :

(A)  (B)  (C)  (D) 

3. The correct order of C–N bond length in the given compounds is :

P : CH_3CN Q : HNCO R : CH_3CONH_2

(A) P > Q > R (B) P = Q = R (C) R > Q > P (D) R > P > Q

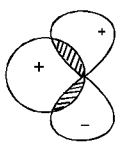
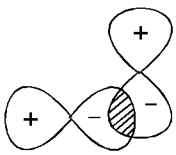
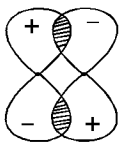
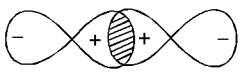
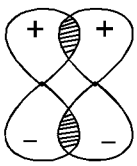
4. Correct order of bond length is :

(A) $CO_3^{2-} > CO_2 > CO$ (B) $CO_2 > CO > CO_3^{2-}$ (C) $CO > CO_2 > CO_3^{2-}$ (D) None of these.

5. The strength of bonds by s – s, p – p, s – p overlap is generally in the order :

(A) s – s > s – p > p – p (B) s – s > p – p > s – p (C) s – p > s – s > p – p (D) p – p > s – s > s – p

6. Which of the following atomic orbital overlappings are not allowed :

(i)  (ii)  (iii)  (iv)  (v) 

(A) All (B) (i) (ii) (iii) (C) (i) (iii) (v) (D) (ii) only

7.* Indicate the wrong statement according to VBT :

(A) A sigma bond has no free rotation about the inter-nuclear axis.

(B) p-orbitals always have only sidewise overlapping.

(C) s-orbitals never form π - bonds.

(D) There can be more than one sigma bond between two atoms.

8.* Which of the following overlaps is/are incorrect [assuming X-axis to be the internuclear axis] :

(a) $2p_y + 2p_y \rightarrow \pi$ (b) $2p_z + 2p_z \rightarrow \sigma$ (c) $2p_x + 2p_x \rightarrow \pi$ (d) $1s + 2p_y \rightarrow \pi$

(e) $2p_y + 2p_z \rightarrow \pi$ (f) $1s + 2s \rightarrow \sigma$

(A) 'a' & 'b' (B) 'b' & 'd' (C) 'd' & 'f' (D) 'c' & 'e'

Answer Key

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1.	(B)	**2.**	(B)	**3.**	(C)	**4.**	(A)	**5.**	(A)
6.	(B)	**7.***	(ABD)	**8.***	(BD)				

Hints & Solutions

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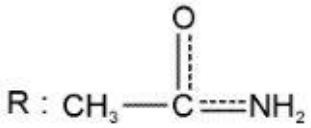
3. P : $CH_3 - C \equiv N$

Q : H -- N = C = O

R : 

4. CO_3^{2-} : bond length between C–O and C=O (due to resonance) bond length Maximum

CO_2 : bond length shorter than C=O.

CO : bond order = 3 $\Rightarrow$ Triple bond $\Rightarrow$ bond length Minimum.