

|                                       |                          |                            |
|---------------------------------------|--------------------------|----------------------------|
| Date Planned : __ / __ / __           | Daily Tutorial Sheet - 7 | Expected Duration : 90 Min |
| Actual Date of Attempt : __ / __ / __ | Level - 2                | Exact Duration : _____     |

86. Match List 1 with List 2. Select the correct answer using the codes given below the list.



| List 1 (Species) |                 | List 2 (Hybridization) |                          |
|------------------|-----------------|------------------------|--------------------------|
| (A)              | $\text{NH}_4^+$ | 1.                     | $\text{sp}^3 \text{d}^3$ |
| (B)              | $\text{PCl}_5$  | 2.                     | $\text{sp}^3 \text{d}$   |
| (C)              | $\text{SF}_6$   | 3.                     | $\text{sp}^3$            |
| (D)              | $\text{IF}_7$   | 4.                     | $\text{sp}^3 \text{d}^2$ |

Codes:

(A) A-3, B-2, C-4, D-1

(B) A-1, B-2, C-3, D-4

(C) A-2, B-3, C-1, D-4

(D) A-4, B-1, C-2, D-3

87. Match List 1 with List 2. Select the correct answer using the codes given below the list.

| List 1 (Species) |                    | List 2 (Shape) |                    |
|------------------|--------------------|----------------|--------------------|
| (A)              | $\text{XeO}_3$     | 1.             | Planar triangular  |
| (B)              | $\text{XeOF}_4$    | 2.             | T-shape            |
| (C)              | $\text{BO}_3^{3-}$ | 3.             | Trigonal pyramidal |
| (D)              | $\text{ClF}_3$     | 4.             | Square pyramidal   |
| (E)              | $\text{I}_3^-$     | 5.             | Linear             |

Codes:

(A) A-1, B-4, C-3, D-2, E-5

(B) A-2, B-4, C-1, D-3, E-5

(C) A-3, B-4, C-1, D-2, E-5

(D) A-4, B-3, C-1, D-2, E-5

88. Match List 1 with List 2. Select the correct answer using the codes given below the list.

| List 1 (Species) |                        | List 2 (Shape) |                        |
|------------------|------------------------|----------------|------------------------|
| (A)              | $\text{PCl}_5$         | 1.             | Linear                 |
| (B)              | $\text{IF}_7$          | 2.             | Pyramidal              |
| (C)              | $\text{H}_3\text{O}^+$ | 3.             | Trigonal bipyramidal   |
| (D)              | $\text{ClO}_2^-$       | 4.             | Tetrahedral            |
| (E)              | $\text{NH}_4^+$        | 5.             | Pentagonal bipyramidal |
|                  |                        | 6.             | Angular                |

Codes:

(A) A-3, B-5, C-2, D-1, E-4

(B) A-3, B-5, C-4, D-1, E-2

(C) A-3, B-5, C-6, D-1, E-2

(D) A-3, B-5, C-2, D-6, E-4

89. Consider the following molecules or ions:

I.  $\text{H}_2\text{O}$

II.  $\text{NH}_4^+$

III.  $\text{SO}_4^{2-}$

IV.  $\text{ClO}_4^-$

V.  $\text{NH}_3$

$\text{sp}^3$  hybridisation is involved in the formation of :

(A) I, II & V only

(B) I & II only

(C) I, II, III, IV & V

(D) I, II, III & IV only

**\*90.** In which of the following, the central atom does not use  $sp^3$  hybrid orbitals in its bonding ? ▶

- (A)  $CH_3^+$                       (B)  $\bar{C}H_3$                       (C)  $NF_3$                       (D)  $BeF_3^-$

**91.** In which of the following compound, centre atom forms six or more than six hybrid orbitals ?

- (A)  $PCl_5$                       (B)  $CO_3^{2-}$                       (C)  $SO_3$                       (D)  $XeF_6$

**92.** The shape of  $XeOF_4$  molecule is

- (A) Octahedral                                              (B) Pentagonal bipyramidal  
(C) Square planar                                              (D) Square pyramidal

**93.** In  $ClF_3$ , lone pair of electrons is present at equatorial position to minimize :

- (A) Lone pair –lone pair repulsion only  
(B) Lone pair-bond pair repulsion mainly  
(C) Lone pair –lone pair and lone pair-bond pair repulsion only  
(D) Lone pair-lone pair and bond pair-bond pair repulsion only

**94.** In allene ( $C_3H_4$ ), the type(s) of hybridization of the carbon atoms, is (are) ▶

- (A)  $sp$  and  $sp^3$                       (B)  $sp$  and  $sp^2$                       (C) only  $sp^3$                       (D)  $sp^2$  and  $sp^3$

**95.** In an  $sp$ -hybridized carbon atom,

- (A) two p orbitals remain unhybridized and one p orbital gets hybridized  
(B) all the three p orbitals get hybridized  
(C) one p orbital remains unhybridized and two p orbitals get hybridized  
(D) None of the above is true