

Q1. 21 January Shift 1

Given below are two statements :

Statement I : The number of species among SF_4 , NH_4^+ , $[\text{NiCl}_4]^{2-}$, XeF_4 , $[\text{PtCl}_4]^{2-}$, SeF_4 and $[\text{Ni}(\text{CN})_4]^{2-}$, that have tetrahedral geometry is 3.

Statement II : In the set $[\text{NO}_2]$, BeH_2 , BF_3 , AlCl_3 , all the molecules have incomplete octet around central atom.

In the light of the above statements, choose the correct answer from the options given below :

- (1) Statement I is true but Statement II is false (2) Statement I is false but Statement II is true
(3) Both Statement I and Statement II are true (4) Both Statement I and Statement II are false

Q2. 21 January Shift 2

Given below are two statements:

Statement I : The correct order in terms of bond dissociation enthalpy is $\text{Cl}_2 > \text{Br}_2 > \text{F}_2 > \text{I}_2$.

Statement II: The correct trend in the covalent character of the metal halides is $[\text{SnCl}_4 > \text{SnCl}_2]$, $[\text{PbCl}_4 > \text{PbCl}_2]$ and $[\text{UF}_4 > \text{UF}_6]$.

In the light of the above statements, choose the correct answer from the options given below :

- (1) Statement I is false but Statement II is true (2) Both Statement I and Statement II are false
(3) Statement I is true but Statement II is false (4) Both Statement I and Statement II are true

Q3. 21 January Shift 2

The correct increasing order of $C-H(A)$, $C-O(B)$, $C=O(C)$ and $C\equiv N(D)$ bonds in terms of covalent bond length is:

- (1) $D < C < A < B$ (2) $A < D < C < B$
(3) $D < C < B < A$ (4) $A < B < C < D$

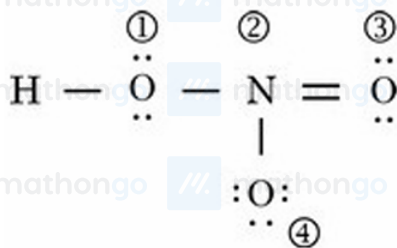
Q4. 22 January Shift 1

Two p-block elements X and Y form fluorides of the type EF_3 . The fluoride compound XF_3 is a Lewis acid and YF_3 is a Lewis base. The hybridizations of the central atoms of XF_3 and YF_3 respectively are

- (1) sp^2 and sp^3 (2) Both sp^3
(3) sp^3 and sp^2 (4) Both sp^2

Q5. 22 January Shift 1

The formal charges on the atoms marked as (1) to (4) in the Lewis representation of HNO_3 molecule respectively



are

- (1) 0, 0, -1, +1 (2) 0, -1, 0, +1 (3) +1, 0, 0, -1 (4) 0, +1, 0, -1

Q6. 22 January Shift 2

Among H_2S , H_2O , NF_3 , NH_3 and CHCl_3 , identify the molecule (X) with lowest dipole moment value. The number of lone pairs of electrons present on the central atom of the molecule (X) is :

- (1) 0 (2) 3 (3) 2 (4) 1

Q7. 23 January Shift 1

Identify the molecule (X) with maximum number of lone pairs of electrons (obtained using Lewis dot structure) among HNO_3 , H_2SO_4 , NF_3 and O_3 . Choose the correct bond angle made by the central atom of the molecule (X).

- (1) 116° (2) 102° (3) 107° (4) 120°

Q8. 23 January Shift 2

Which statements are NOT TRUE about XeO_2F_2 ?

- A. It has a see-saw shape.
- B. Xe has 5 electron pairs in its valence shell in XeO_2F_2 .
- C. The $\text{O} - \text{Xe} - \text{O}$ bond angle is close to 180° .
- D. The $\text{F} - \text{Xe} - \text{F}$ bond angle is close to 180° .
- E. Xe has 16 valence electrons in XeO_2F_2 .

Choose the correct answer from the options given below:

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

Q9. 24 January Shift 1

Among the following, the CORRECT combinations are

- A. $\text{IF}_3 \rightarrow$ T-shaped ($\text{sp}^3 \text{d}$)
- B. $\text{IF}_5 \rightarrow$ Square pyramidal ($\text{sp}^3 \text{d}^2$)
- C. $\text{IF}_7 \rightarrow$ Pentagonal bipyramidal ($\text{sp}^3 \text{d}^3$)
- D. $\text{ClO}_4^- \rightarrow$ Square planar ($\text{sp}^2 \text{d}$)

Choose the correct answer from the options given below:

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

Q10. 24 January Shift 1

Given below are statements about some molecules/ions.

Identify the CORRECT statements.

- A. The dipole moment value of NF_3 is higher than that of NH_3 .
- B. The dipole moment value of BeH_2 is zero.
- C. The bond order of O_2^{2-} and F_2 is same.
- D. The formal charge on the central oxygen atom of ozone is -1.
- E. In NO_2 , all the three atoms satisfy the octet rule, hence it is very stable.

Choose the correct answer from the options given below:

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

Q11. 24 January Shift 2

Pair of species among the following having same bond order as well as paramagnetic character will be-

- (1) O_2^- , N_2^+
- (2) O_2^+ , N_2^{2-}
- (3) O_2^- , N_2^-
- (4) O_2^+ , N_2^-

Q12. 28 January Shift 1

Given below are two statements:

Statement I: The number of species among BF_4^- , SiF_4 , XeF_4 and SF_4 , that have unequal E – F bond lengths is two. Here, E is the central atom.

Statement II: Among O_2^- , O_2^{2-} , F_2 and O_2^+ , O_2^- has the highest bond order.

In the light of the above statements, choose the correct answer from the options given below

- (1) Both Statement I and Statement II are false
- (2) Statement I is true but Statement II is false
- (3) Statement I is false but Statement II is true
- (4) Both Statement I and Statement II are true

Q13. 28 January Shift 2

Match List - I with List - II according to shape.

List-I	List-II
A. XeO_3	I. BrF_5
B. XeF_2	II. NH_3
C. XeO_2F_2	III. $[\text{I}_3]^-$
D. XeOF_4	IV. SF_4

Choose the correct answer from the options given below :

(1) A-II, B-III, C-I, D-IV

(2) A-II, B-I, C-III, D-IV

(3) A-II, B-III, C-IV, D-I

(4) A-III, B-II, C-IV, D-I

ANSWER KEYS

1. (2)

2. (3)

3. (2)

4. (1)

5. (4)

6. (4)

7. (3)

8. (1)

9. (3)

10. (3)

11. (4)

12. (1)

13. (3)