

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 $[\text{NO}_2, \text{BeH}_2, \text{BF}_3, \text{AlCl}_3]$, 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) $A < B < C < D$

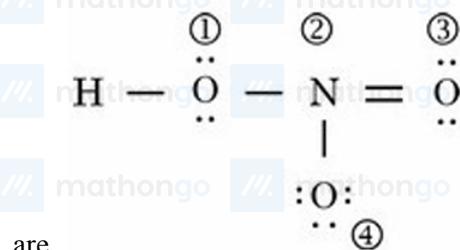
Q4. 22 January Shift 1

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



- (1) 0, 0, -1, +1 // map(2) 0, -1, 0, +1 mathon(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

O7, 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°

O8. 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 O – Xe – O bond angle is close to 180° .
 - D. The F – Xe – 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:

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)