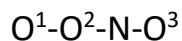




Structure and Bonding-(2)

(1) Skeleton of $[OONO]^-$ ion is given below.

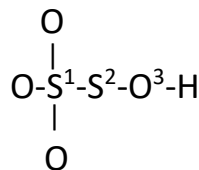


i. Draw the most acceptable Lewis structure for the above molecule.

ii. Complete the following table using the above Lewis structure.

	Around N	Around O^2
VSEPR pairs around the atom		
Electron pair geometry around the atom		
Shape around the atom		

(2) Skeleton of $HS_2O_5^-$ ion is given below.

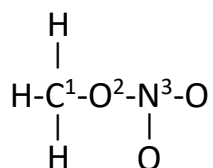


i. Draw the most acceptable Lewis structure for the above molecule.

ii. Complete the following table using the above Lewis structure.

	S^1	S^2	O^3
Electron pair geometry around the atom			
Shape around the atom			

(3) Skeleton of methylnitrate (CH_3NO_3) molecule is given below.

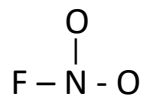


i. Draw the most acceptable Lewis structure for the above molecule.

ii. Complete the following table using the above Lewis structure.

	C^1	O^2	N^3
Electron pair geometry around the atom			
Shape around the atom			

(4) Skeleton of FNO_2 is given below.



i. Draw the most acceptable Lewis structure for the above molecule.

ii. Write the suitable answers on the dotted lines.

a) Number of VSEPR pairs around the N atom -

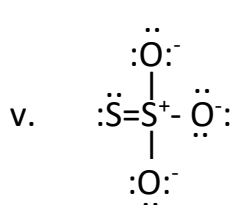
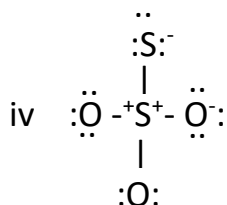
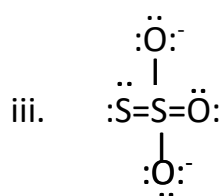
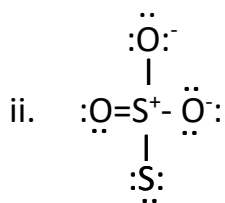
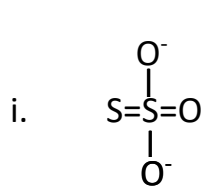
b) Electron pair geometry around the N atom -

c) Shape around the N atom -

(5) Which of the following has the same bonding pattern as the NO₂ molecule?



(6) Which of the following represents the most acceptable Lewis structure of the S₂O₃²⁻ molecule?



(7) The shape and the electron pair geometry of the XeOF₄ molecule is,

- i. Trigonal bipyramidal and octahedral
- ii. Square pyramidal and trigonal bipyramidal
- iii. Trigonal bipyramidal and square pyramidal
- iv. Square pyramidal and octahedral
- v. Octahedral and square pyramidal

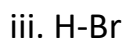
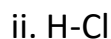
(8) In comparison to PO₄³⁻ ion, which of the following has a different shape?



(9) Which of the following does not contain lone pairs around its central atom?



(10) Which of the following has the shortest distance between covalent bonds?



(11) What atom does not follow the octet rule?



(12) The octet rule is not valid for the molecule,

- i. CO₂ ii. H₂O iii. O₂ iv. CO v. CO₂

(13) Which of the following sentences is **incorrect** for covalent bond?

- i. Covalent bond is formed between atoms having less differences in their electronegativity.
- ii. In all instances described above, the number of electrons in the valence shell after forming chemical bonds is an even number.
- iii. Covalent bonds are formed when a pair of electrons is shared between two atoms of the same element or different elements.
- iv. The strength of covalent bonds depends on the overlap between the valence orbitals of the bonded atoms.
- v. Covalent bonds are less stronger than the ionic bonds.

(14) Which of the following bonds has the lowest polarity?

- i. O-F ii. P-F iii. Si-N iv. B-Cl v. I - F

(15) Which of the following correctly demonstrates the bond polarity's ascending order?

- a) Si - Cl b) S - Cl c) Mg - Cl
- i. $c < a < b$ ii. $b < a < c$ iii. $b < c < a$
- iv. $c < b < a$ v. $a < b < c$

(16) Which of the following groups includes every species that has covalent bonds?

- i. NO, HBr, LiOH ii. NH₃, F₂, AlCl₃ iii. AlF₃, BF₃, H₂O
- iv. NaF, Al(OH)₃, CCl₄ v. CO, BaCl₂, N₂

(17) Which of the following is not contains covalent bonds?

- i. Li₂S ii. MgO iii. Fe₂O₃ iv. Bi₂O₃ v. P₂O₅

(18) Which of the following bonds can be observed between two H atoms?

- i. Hydrogen bond
- ii. polar covalent bond
- iii. non-polar covalent bond
- iv. ionic bond
- v. dative covalent bond