

CHAPTER 4: CHEMICAL BONDING

1. How many resonance structures can be drawn for phosphate ions, PO_4^{3-} ?

A. 2 C. 4
B. 3 D. none

2. The most plausible Lewis structure for a chlorate ion, ClO_3^- , should show contain _____ single bond(s), _____ double bond(s), and _____ lone pair(s).

A. 2, 1, 10 C. 3, 0, 10
B. 1, 2, 8 D. 2, 1, 9

3. Which Lewis structure best represents ozone molecule, O_3 ?

A. $\text{:}\ddot{\text{O}}\text{—}\ddot{\text{O}}\text{—}\ddot{\text{O}}\text{:}$
B. $\text{:}\ddot{\text{O}}\text{—}\ddot{\text{O}}\text{=}\ddot{\text{O}}\text{:}$
C. $\text{:}\ddot{\text{O}}\text{—}\ddot{\text{O}}\text{=}\ddot{\text{O}}\text{:}$
D. $\text{:}\ddot{\text{O}}\text{—}\ddot{\text{O}}\text{=}\ddot{\text{O}}\text{:}$

4. The formal charge on the bromine atom in BrO_3^- drawn with three single bonds is

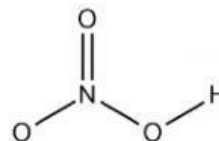
A. -2 C. +1
B. -1 D. +2

5. Nitrous oxide, N_2O , is sometimes called "laughing gas". What is the formal charge on the Oxygen atom in the most plausible Lewis structure for nitrous oxide? (The atom connectivity is N-N-O.)

A. -1 C. +1
B. 0 D. +2

6. Nitric acid, HNO_3 is massively used in the production of explosives and fertilizers. Based on the Lewis structure

of nitric acid, state the formal charge for each element in the compound.



	H	N	O _a	O _b	O _c
A.	0	-1	0	0	+1
B.	-1	0	+1	+1	-1
C.	0	+1	0	0	-1
D.	+1	+1	-1	0	-1

7. For the following species, which one does **NOT** form dative bond?

A. H_3O^+ C. NH_4^+
B. HO_2^- D. Al_2Cl_6

8. The electronic configuration of elements X and Y are as follows:

X: $1s^2 2s^2 2p^1$

Y: $1s^2 2s^2 2p^6 3s^2 3p^5$

When X and Y combine, the most plausible formula and bonding are

FORMULA BONDING

A. XY_3 covalent
B. X_2Y covalent
C. XY_2 ionic
D. X_2Y_3 ionic

9. What element can form an incomplete octet?

A. Boron C. Bismuth
B. Bromine D. Barium