1. (8 points) Draw a valid Lewis structure for the following formulas where none of the atoms have a formal charge.

- \( \text{C}_6\text{H}_{12}\text{O} \) (hexanal)
- \( \text{C}_5\text{H}_{11}\text{BrClN} \) (moxidectin)

2. (10 pts) Indicate the full name of the indicated functional groups indicated in moxidectin. A new drug approved (June 13, 2018) to treat river blindness. Full name = designation of 1° etc where appropriate.

- alkene
- 3° H or 3° alkane
- ester
- 3° alcohol
- ether
3. (8 pts) For the indicated locations on the following compound (this is named mektovi, a compound approved on 6/27/2018 for treating metastatic melanoma), give the atom’s hybridization.

![Chemical structure of mektovi]

**Chemical Formula:** C_{17}H_{15}BrF_{2}N_{4}O_{3}

**Molecular Weight:** 441.23

4. (2 pts) How many electrons are involved in π bonds in mektovi (see above structure)? Circle the correct answer.

0 3 4 5 6 8 9 10 11 12 14 15 16 17 18 20 32

5. (12 points) Draw three additional resonance structures for the following anion showing how the charge can be distributed onto other atoms. Be sure to include non-bonding electrons and charges. Several structure partial drawings are provided for your convenience (you may not need them all). Moving from left to right, use curly arrows to show the movement of electrons between resonance structures.

![Resonance structures]

**Required**