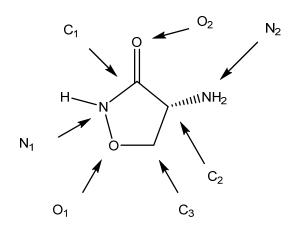
## Organic Chemistry Camp 2020

## Instructor: Mihaela C. Stefan

## **Problems Part 3 (Hybridization, Bond angles)**

1. Shown below is the compound cycloserine, which is used in the treatment of tuberculosis.



- a. How many lone pairs are present in cycloserine?
- b. How many lone pairs are involved in resonance?
- c. What is the hybridization of each nonhydrogen atom in cycloserine?
- O1 N1 O2 N2 C1 C2 C3
- d. What is the angle between each carbon-nitrogen and lone pair of electrons?

<C1-N1-lone pair <C2-N2-lone pair

Eravacycline (structure shown below) is a synthetic fluorocycline antibacterial agent 2. which is currently in the phase 3 clinical trial.

What is the hybridization of each N atom? a.

N1 \_\_\_\_\_ N2 \_\_\_\_ N3 \_\_\_\_

N4 \_\_\_\_

In what type of orbital does the lone pair of electrons reside on each N atom? b.

N1 \_\_\_\_ N2 \_\_\_ N3 \_\_\_

N4

What is the bond angle between the carbon, nitrogen and lone pair of electrons for N4 nitrogen atom?