

MIDTERM EXAM IN
CHEM 121
(CHEMISTRY FOR ENGINEERS)

Test I: What is the oxidation number of nitrogen in each of the following (2 points each)



$$\text{N} + 4(1) + (-1) + 2(-2) = 0$$

$$\text{N} + 4 - 1 + 4 = 0$$

$$\text{N} - 1 = 0$$

$$\text{N} = 1$$



$$2\text{N} + 4(-2) = 0$$

$$2\text{N} - 8 = 0$$

$$2\text{N} = 8$$

$$\text{N} = 4$$

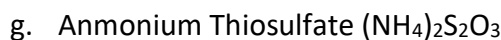


$$1 + \text{N} + 3(-2) = 0$$

$$1 + \text{N} - 6 = 0$$

$$\text{N} - 5 = 0$$

$$\text{N} = 5$$

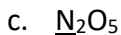


$$2\text{N} + 4(1) + 2(-2) + 3(-2) = 0$$

$$2\text{N} + 4 - 4 - 6 = 0$$

$$2\text{N} = 6$$

$$\text{N} = 3$$



$$2\text{N} + 5(-2) = 0$$

$$2\text{N} - 10 = 0$$

$$2\text{N} = 10$$

$$\text{N} = 5$$



$$\text{N} + 3(1) = 0$$

$$\text{N} + 3 = 0$$

$$\text{N} = -3$$



$$2\text{N} + 4(1) + 2 + (-2) = 0$$

$$2\text{N} + 4 + 2 - 2 = 0$$

$$2\text{N} = -4$$

$$\text{N} = -2$$



$$3 + 12(1) + 3\text{N} + 3(-2) = 0$$

$$15 + 3\text{N} - 6 = 0$$

$$9 + 3\text{N} = 0$$

$$3\text{N} = -9$$

$$\text{N} = -3$$



$$3(1) + \text{N} = 0$$

$$3 + \text{N} = 0$$

$$\text{N} = -3$$



$$1 + \text{N} + 2(-2) = 0$$

$$1 + \text{N} - 4 = 0$$

$$\text{N} - 3 = 0$$

$$\text{N} = 3$$

Test II: Fill in the blanks with formula of compounds composed of the indicated positive and negative ions. (30 points)