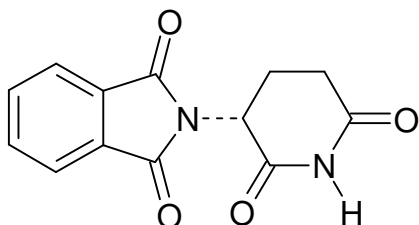


Name: \_\_\_\_\_

**Organic Chemistry Test #1 - Structures and Nomenclature**

1. For each of the following structures determine the degree of unsaturation and use this information to determine the complete chemical formula.

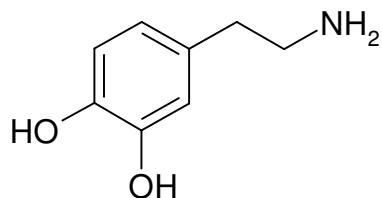


deg. unsat = **10**

formula = **C<sub>13</sub>H<sub>10</sub>N<sub>2</sub>O<sub>4</sub>**

2-(2,6-Dioxo-piperidin-3-yl)-isoindole-1,3-dione

"thalidomide"



deg. unsat = **4**

formula = **C<sub>8</sub>H<sub>11</sub>NO<sub>2</sub>**

4-(2-Amino-ethyl)-benzene-1,2-diol

"dopamine"

2.  $H = [2C + 2] - 2(\text{deg. unsat}) - X + N$

Characterize each formula by providing possible combinations of functional groups (and rings) that will satisfy the formula. (½ mark per correct response)

C<sub>50</sub>H<sub>102</sub>O

**alcohol**

**ether**

C<sub>12</sub>H<sub>24</sub>O<sub>2</sub>

**carboxylic acid**

**alcohol + alcohol + alkene**

**ester**

**alcohol + alcohol + ring**

**aldehyde + alcohol**

**alcohol + ether + alkene**

**aldehyde + ether**

**alcohol + ether + ring**

**ketone + alcohol**

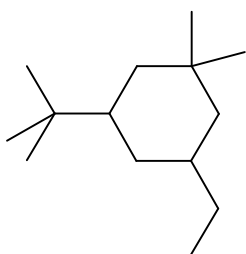
**ether + ether + alkene**

**ketone + ether**

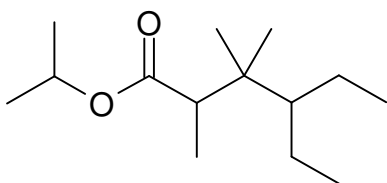
**ether + ether + ring**



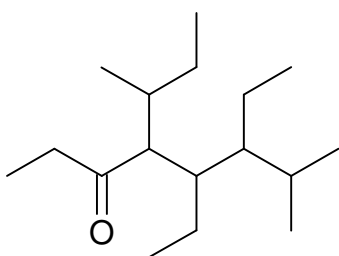
4. Write complete I.U.P.A.C. names for each of the following:



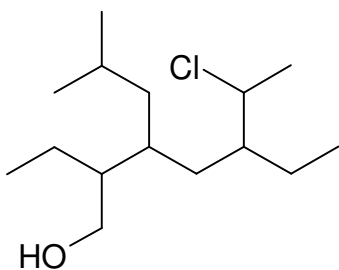
3-t-butyl-5-ethyl-1,1-dimethylcyclohexane



isopropyl 4-ethyl-2,3,3-trimethylhexanoate



4-secbutyl-5,6-diethyl-7-methyl-3-octanone



6-chloro-2,5-diethyl-3-isobutyl-1-heptanol

5. Provide all structural isomer for this formula. Present your work in an organized fashion. Marks will be deducted for duplicate (or triplicate etc. structures).

