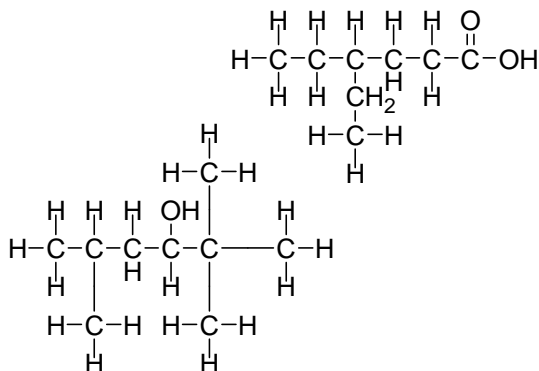
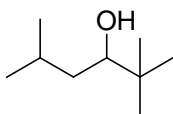
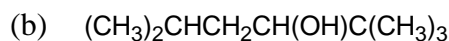
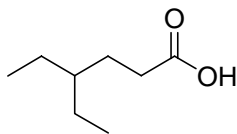
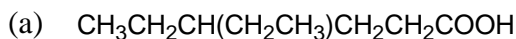
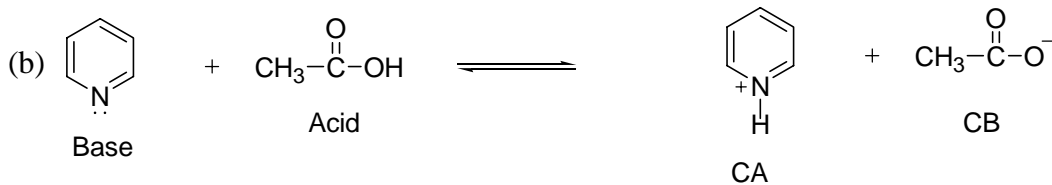
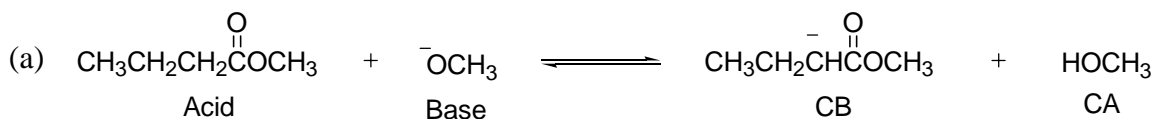


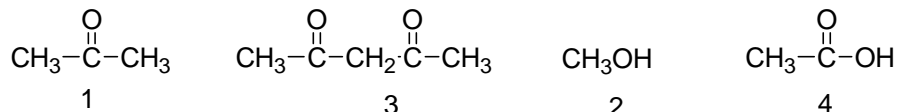
1. Draw the (i) complete structural formula and (ii) bond-line formula for each of the following: [8]




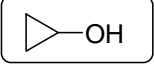

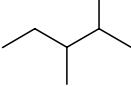
2. Complete the following reactions and identify acids and bases and their corresponding conjugated acids and bases: [8]



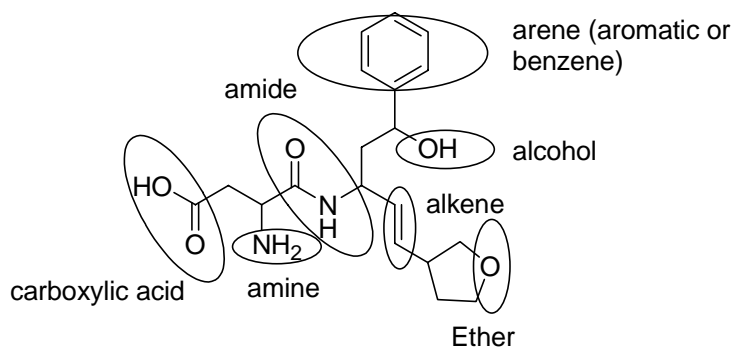
3. Rank the following substances in order of increasing acidity: (1 for least and 4 for most acidic) [4]



4. Which compound in each of the following pairs should have the higher boiling point? Explain your answer. [4]

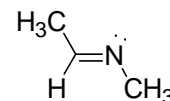
- 3
- (a)  or  intermolecular H-bonding
- (b)  or  due to strong van der Waals interaction - straight molecules can align themselves in layers

5. Identify all the functional groups in the following organic compounds: (circle them and write the name of the functional group) [10]



6. In the following compound: [8]

- (a) the approximate C-C-H bond angle is  $120^\circ$
- (b) The total number of sigma ( $\sigma$ ) bond is 10
- (c) The percent s character of N atom is 33.3
- (d) The hybridization of the C atom ( $\text{CH}_3$ ) attached to the N atom is  $\text{sp}^3$



7. Give at least TWO resonance structure for each of the following and identify the major contributor in each: [8]

