


General Instructions: Read each question carefully and answer each question in the expected format, using proper English grammar, punctuation, and spelling.

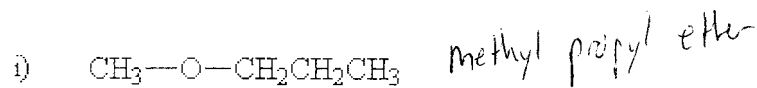
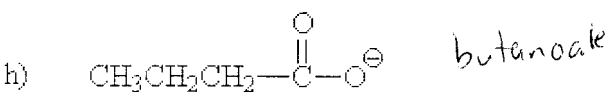
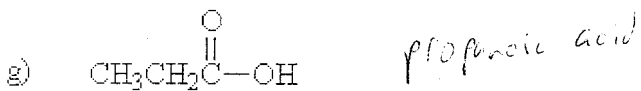
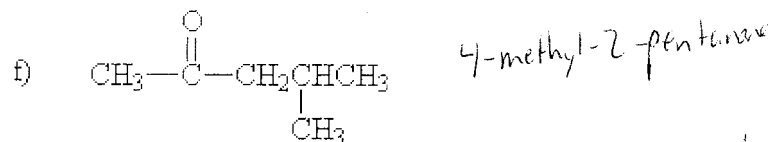
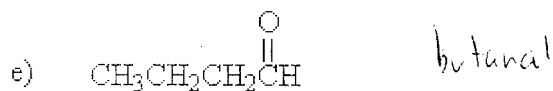
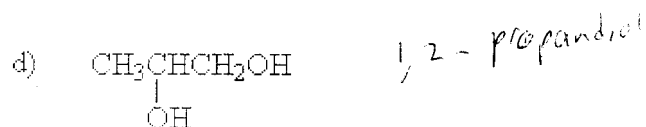
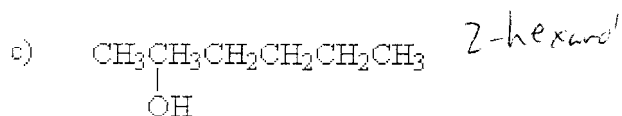
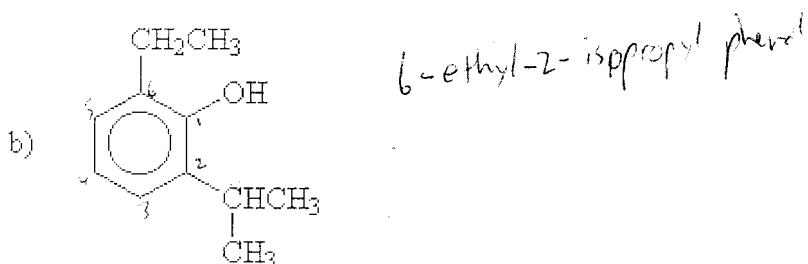
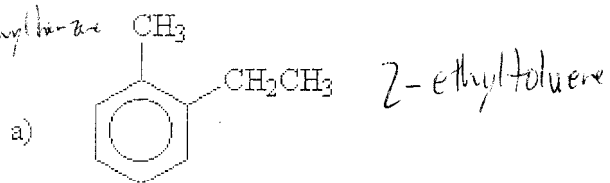
Part 1 – Definitions (2 points each)

1. primary alcohol – OH is attached to 1° carbon
2. Lucas test is a test involving formation of an insoluble chloride to determine whether an alcohol is primary, secondary or tertiary.
3. reduction – gain of H or loss of O
4. Heteroatom is an atom in a molecule other than carbon or hydrogen.
5. carboxylate ion – $R - \overset{\overset{O}{\parallel}}{C} - O^{\ominus}$
6. Saponification is the cleavage of an ester with a strong base such as NaOH.
7. amine – $R - NH_2$
8. amide is a molecule containing the functional group $R - \overset{\overset{O}{\parallel}}{C} - \underset{\underset{H}{|}}{N} - R'$
9. meta isomer – 1,3 attachments on benzene ring 
10. thiol is the functional group R-SH

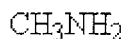
Part 2. Nomenclature

11. Give the IUPAC name of the following molecules (3 points each).

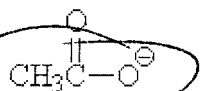
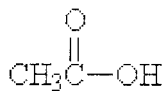
-1 if methyl to -2e



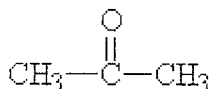
12. For each of the following pairs of molecules, circle the molecule with the largest characteristic indicated.
(5 points)



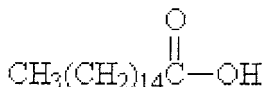
boiling point



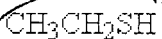
water solubility



polarity

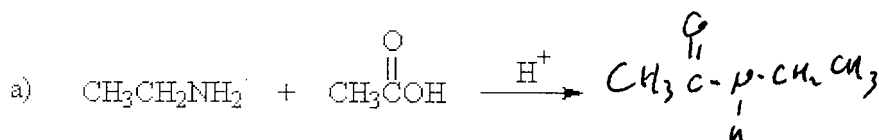


acidity

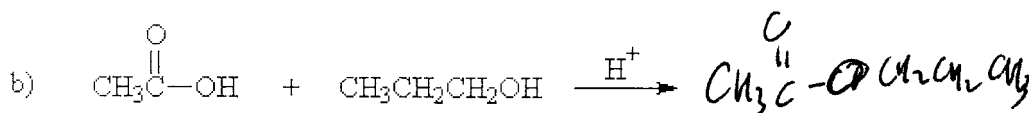


stench (stinky)

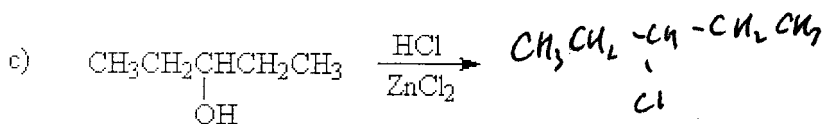
10. Predict the product of the following reactions. If no reaction occurs, write "NR". Name the product or reactant where specified. (3 pts each reaction, 1 pt each name)



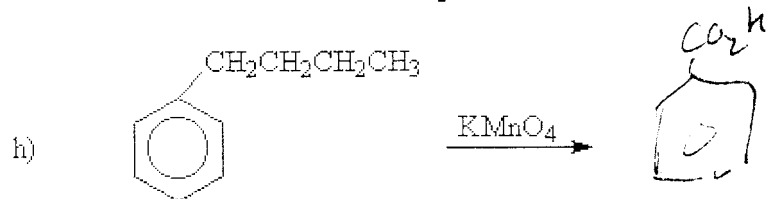
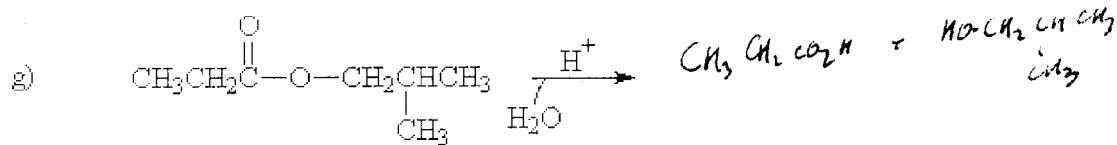
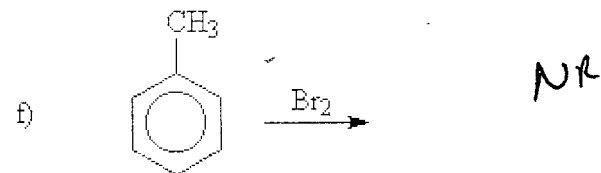
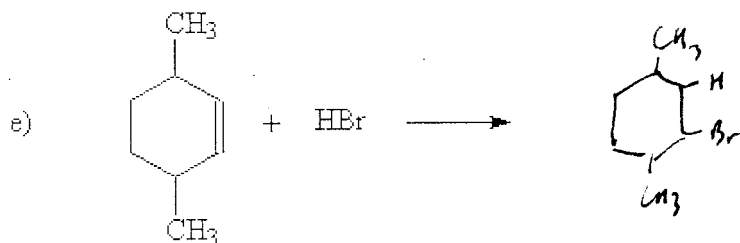
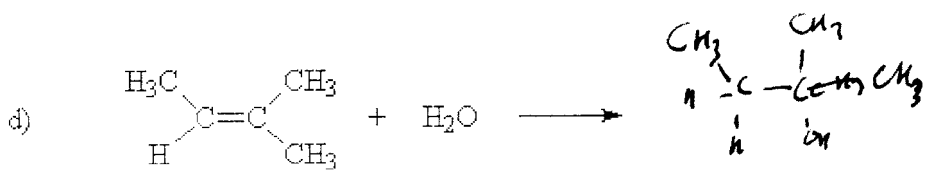
ethyl ethanamide
name product



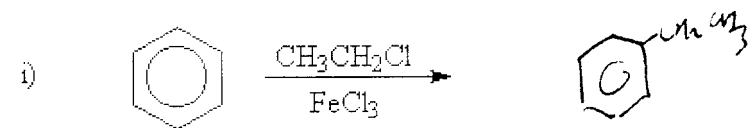
propyl ethanoate
name product



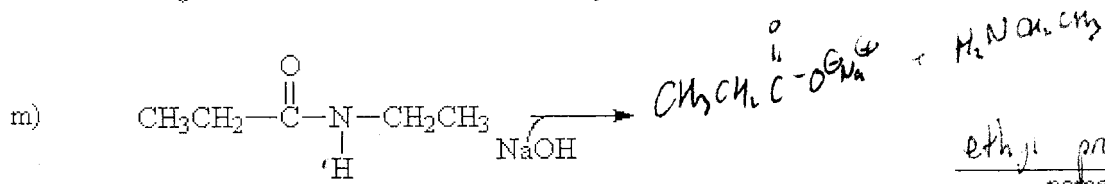
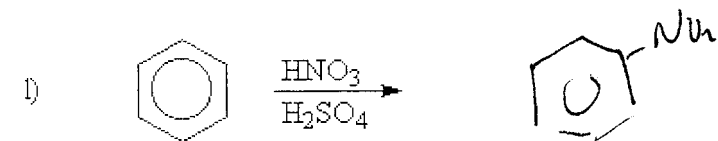
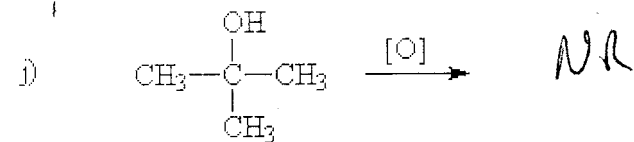
2-chloropentane
name product



benzoic acid
name product



ethyl benzene
name product



ethyl propanoate
name reactant