

882



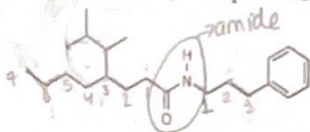
DR. JEKYLL & AL DE HYDE
[96 marks]

87.5
96
917



Communication [28 marks] [2.5]
1. Name the following compounds. [8 + 5 + 5 = 18 marks]

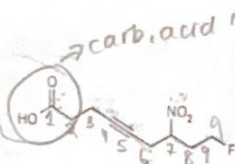
(a)



N-3-phenylpropyl 4-(1,2-dimethylpropyl) octanamide

only N attached?

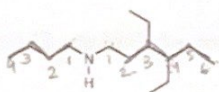
(b)



9-fluoro-7-nitro-non-4-ynoic acid

17.5

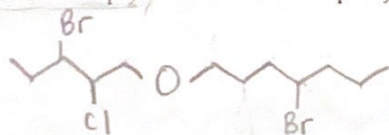
(c)



butyl 3,4-diethylhexanamine

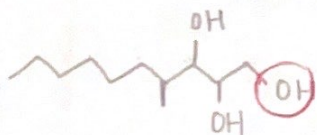
2. Draw structures for the following compounds. [6 + 4 = 10 marks]

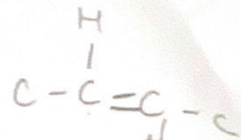
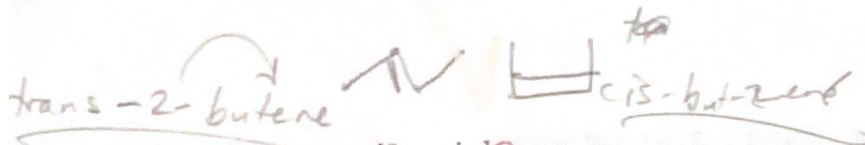
(a) 4-bromoheptyl 2-chloro-3-bromopentyl ether



9

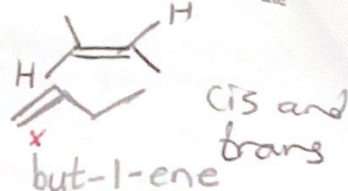
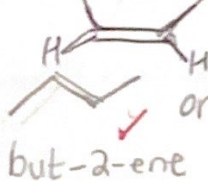
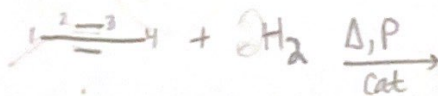
(b) 4-methyl-decane-2,3-diol





Making Connections [8 marks]

3. Why does the hydrogenation of but-2-yne with 1.0 mole of hydrogen produce two isomers? Include the names of the two isomers. [4 marks]


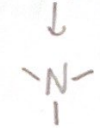


2 isomers are made because when you have an addition rxn across a double bond, and you add a molecule like H_2 or Br_2 , Markovnikov's rule states the ^{added} H will attach to the C (in the molecule made) that already has more H. In this case, we have a triple bond, so that does not happen, and 2 isomers are made. otherwise, with Markovnikov, only one molecule is made

4. Would benzene or phenol be more soluble in water? Explain. [2 marks]

2 Benzene is aromatic \rightarrow non polar
phenol \rightarrow an alcohol \rightarrow polar, HB
Water is polar and phenol is polar \rightarrow like dissolves like, so phenol is more soluble

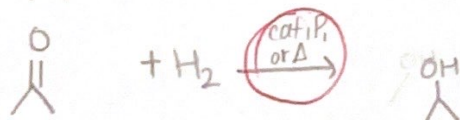
5. Which is likely to have the higher boiling point, dimethylamine or trimethylamine? Explain. [2 marks]

2  
dimethylamine has a \uparrow BP because the HN bond is polar and HB, and the trimethylamine has no HB, because instead of a H there is another C connected to N

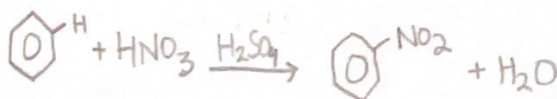
Inquiry [28 marks]

6. Write structural diagram equations to illustrate each of the following reactions. Include all pertinent conditions. [4 + 4 + 4 = 12 marks]

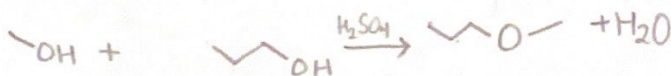
(a) the preparation of an alcohol from a ketone



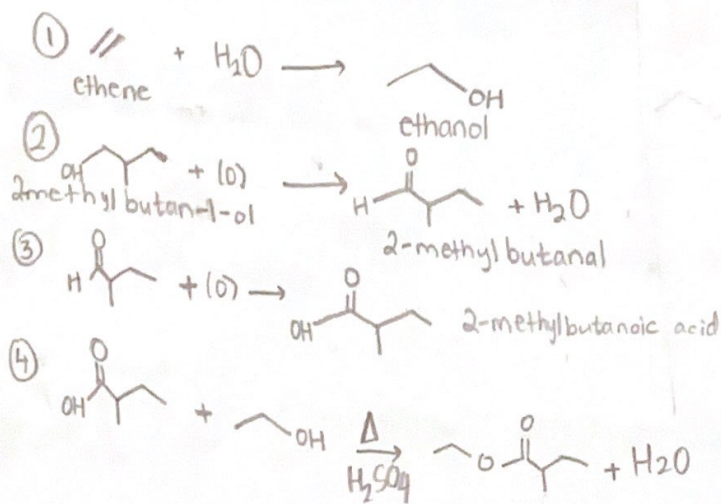
(b) the nitration of benzene



(c) the preparation of methyl propyl ether



7. Propose a sequence of reactions to synthesize ethyl 2-methylbutanoate from an alkene and an alcohol. Include all pertinent conditions. Name all unique organic reactants and products. [16 marks]



alkene I started with → C=C → ethene

alcohol I started with → 2-methylbutan-1-ol

16

Knowledge & Understanding $1 + 28 = 29$
 [3 + 29 = 32 marks]

8. Show the complete polymerization reaction that occurs using the monomer below (show two repeating units). What type of polymerization have you depicted? [3 marks]

