

LEC (5)

CHEM 30A

Oct 10th

①

① HYBRIDISATION

ALKANES

OFFICE HOURS Tues 11-1 pm

② STRUCTURE

READ 2-2.6

③ ISOMERS

PROBLEMS

④ NOMENCLATURE

2.1, 2.2, 2.7, 2.16-2.31

① HYBRIDISATION

pages 7 & 8 of LEC (4)

ALKANES

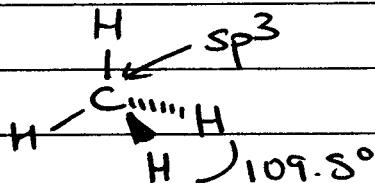
② STRUCTURE

alkanes → saturated hydrocarbons

↓
each C has
max Hs

↓
only C & H

general formula C_nH_{2n+2} (no rings)

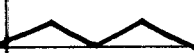


METHANE CH_4

CH_3-CH_3 ETHANE C_2H_6

 PROPANE C_3H_8

 BUTANE C_4H_{10}

 PENTANE C_5H_{12}

and so on...

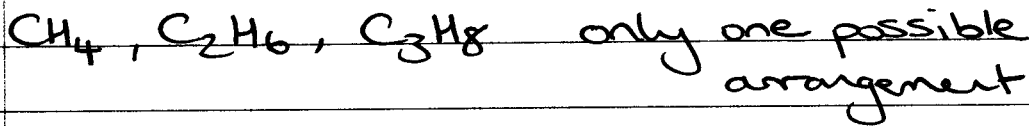
hex, hept,

oct, non, dec

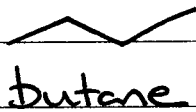


③ ISOMERS

- same molecular formula, different arrangement of atoms \Rightarrow CONSTITUTIONAL ISOMERS



How about C_4H_{10}



2 methylpropane

Do C_6H_{14}
for HMM
(5)

④ NOMENCLATURE

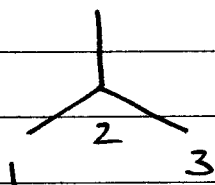
International Union of Pure & Applied Chemistry
IUPAC \Rightarrow SYSTEMATIC NAMING

- straight chains (done)

- BRANCHED STRUCTURES

(i) identify longest chain

(ii) each substituent gets a name & number

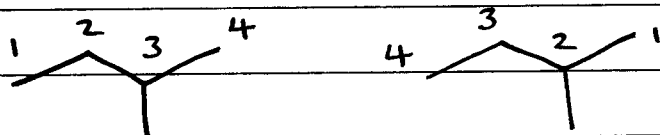


2-METHYLPROPANE

ALKYL GROUPS

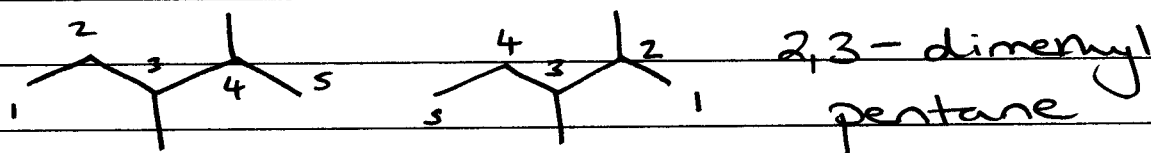
- CH_3- methyl
- CH_3CH_2- ethyl
- $\text{CH}_3\text{CH}_2\text{CH}_2-$ propyl
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2-$ butyl etc, etc

(iii) Minimise substituent number



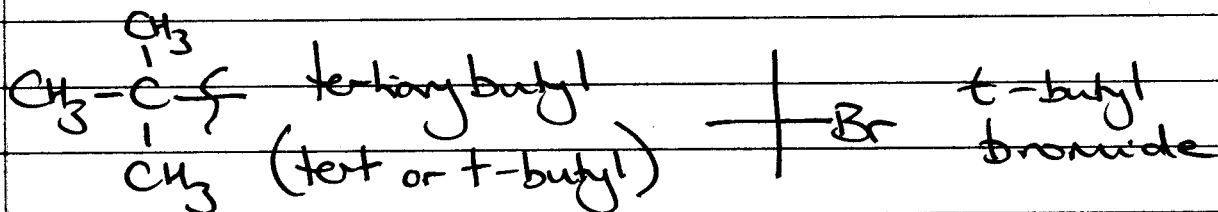
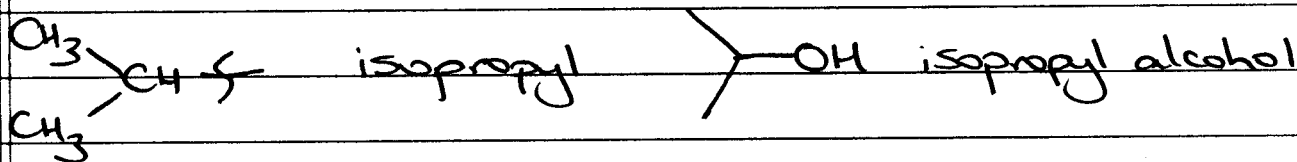
~~3-methyl butane~~ 2-methyl butane ✓

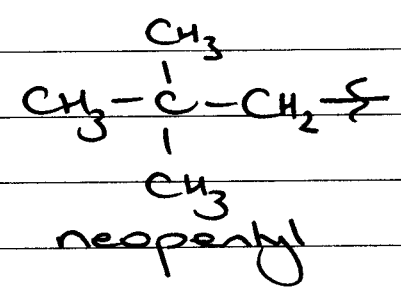
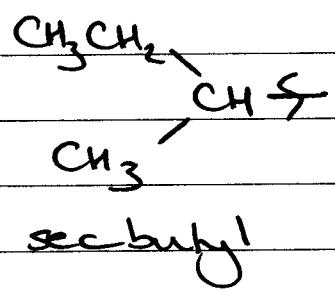
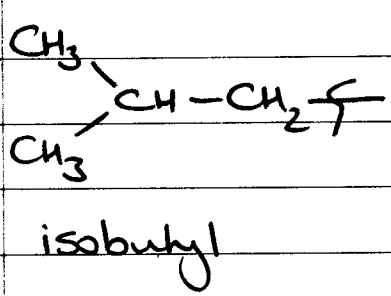
(iv) Same substituent more than once



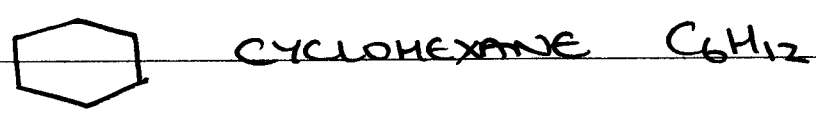
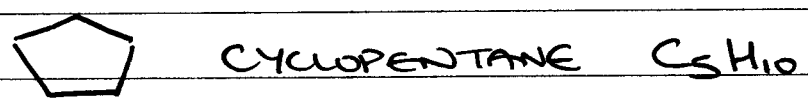
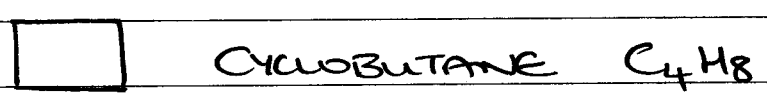
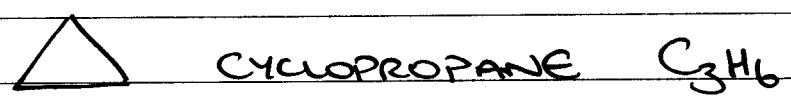
after this, it gets silly!

COMMON NAMES



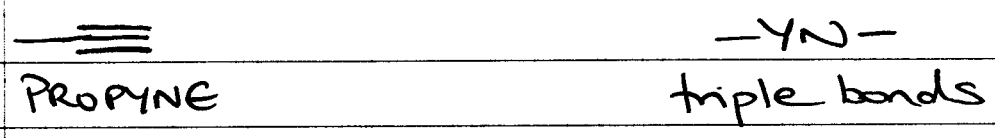
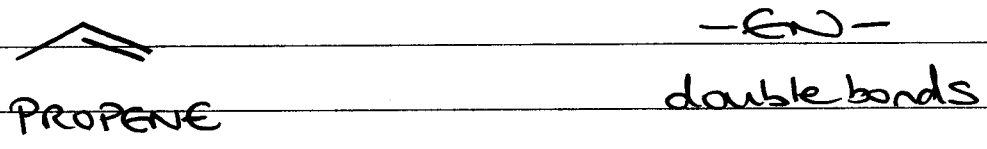
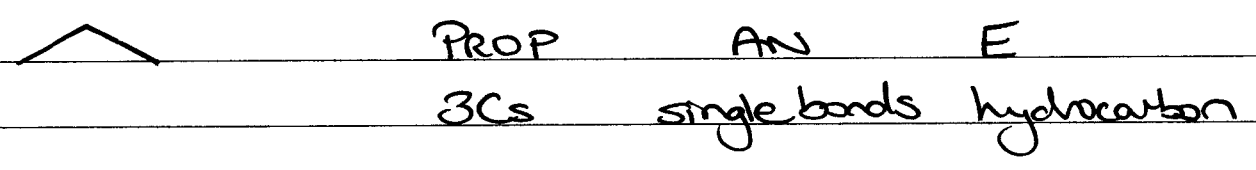


- CYCLOALKANES (C_nH_{2n})

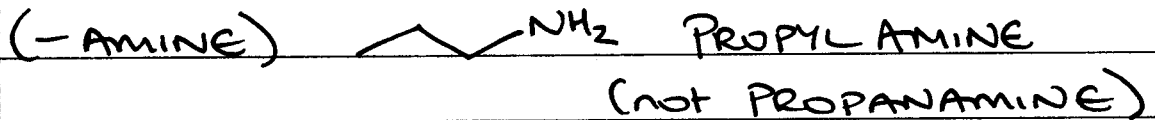
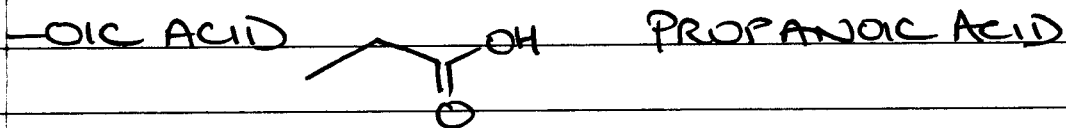
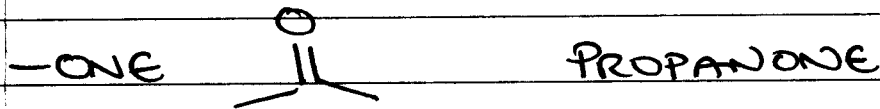
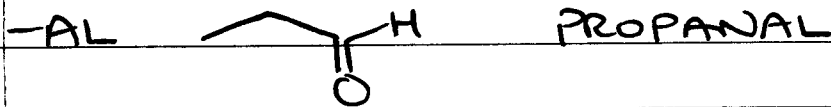
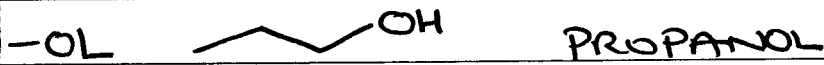
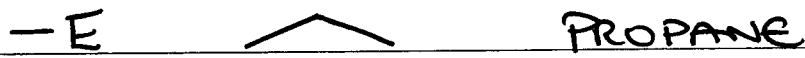


BICYCLOALKANES - FORGET IT !!

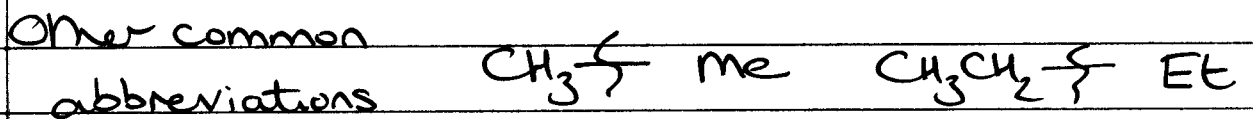
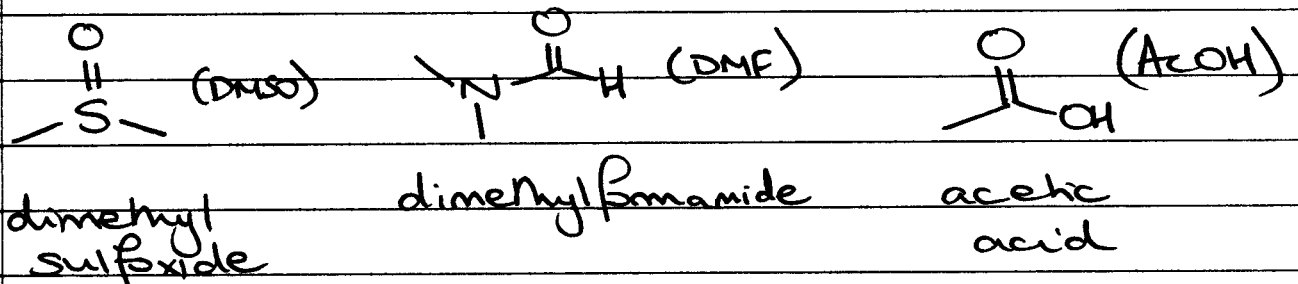
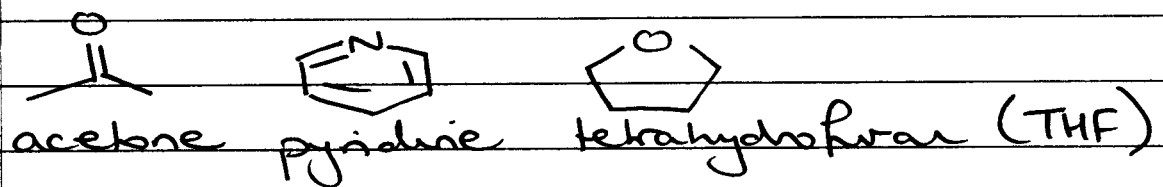
General rules: PREFIX - INFIX - SUFFIX



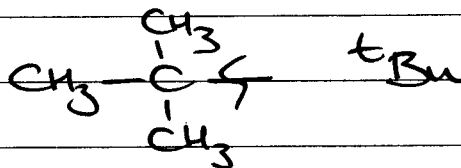
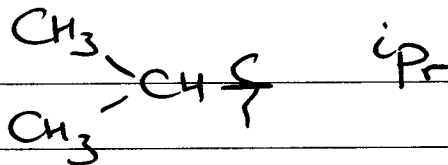
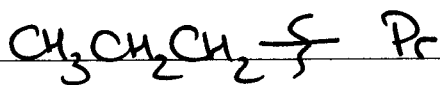
SUFFIXES → FUNCTIONAL GROUPS



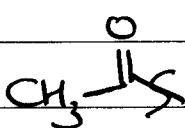
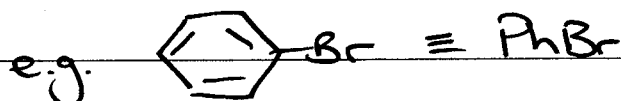
Common names / Structures / Acronyms (keep a notebook)



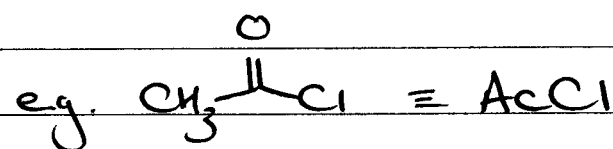
6



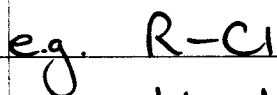
- Ph (PHENYL)



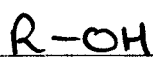
Ac (ACETYL)



R GROUPS - stuff dangling off the area of interest in a molecule



chloride



alcohol



carboxylic acid

FUNCTIONAL GROUPS

