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LEC ① CHEM 30A

October 1st

- ① WHO/WHEN/WHERE/HOW?
- ② WHAT?

HMK

READ Ch 1, sections 1-1.4

PROBLEMS 1.1-1.5, 1.19-1.22

① Me

- Office 3077D YOUNG HALL
- E-mail & WEBSITE → ANNOUNCEMENTS  
EXAM KEYS  
USE VOH FOR QUESTIONS
- LECTURES 9am - Sucks [LECTURE NOTES]  
(BUT I HAVE NO CHOICE) MODEL KITS
- QUESTIONS IN CLASS OK
- DON'T FAIL, I TEACH 30A ALL YEAR!
- ENGLISH, ENGLISH
- 26<sup>th</sup> LETTER, ALUMINIUM, FOOTBALL
- WAITLIST

TAs

Adam, Phil, Cari, Heather

OH / Discussions posted on WEBSITE  
all OH in 3077F Young Hall

Discussions begin MONDAY  
Discussion 1I now in BOELTER 5419  
(THURS 9am)

TEXTBOOK BROWN & ROOT 3rd ED

- HWK/READING assignments

EXAMS

3 QUIZZES	100	(3 x 35)
2 MIDTERMS	200	(2 x 115)
1 FINAL	<u>200</u>	(1 x 230)
	500	

FINAL IS COMPREHENSIVE

PENCIL = NO REGRADES  
(READ EXAM POLICY)

CHEATING - DON'T EVEN THINK ABOUT IT

SYLLABUS - tentative...

3

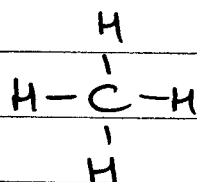
## WHAT - ORGANIC CHEMISTRY

ORGANIC - CHEMISTRY OF COMPOUNDS FROM LIVING THINGS AS OPPOSED TO INORGANIC COMPOUNDS

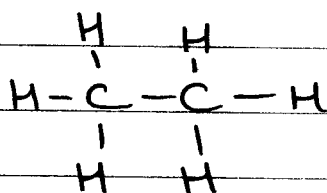
- STUDY OF COMPOUNDS CONTAINING CARBON

SIMPLEST COMPOUNDS

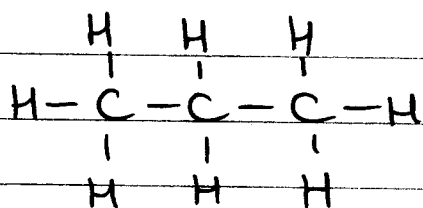
CARBON + HYDROGEN  $\rightarrow$  HYDROCARBONS



$\text{CH}_4$  methane



$\text{C}_2\text{H}_6$  ethane



$\text{C}_3\text{H}_8$  propane

ALKANES

Hydrocarbons serve as a framework from which to dangle functional groups

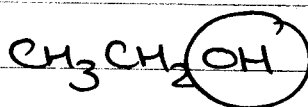
## - FUNCTIONAL GROUPS

4

SPECIFIC COMBINATIONS OF ATOMS IN  
PRECISE ARRANGEMENTS -

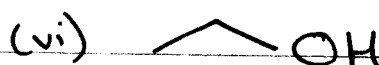
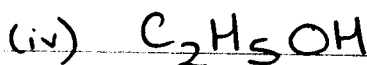
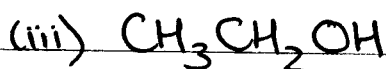
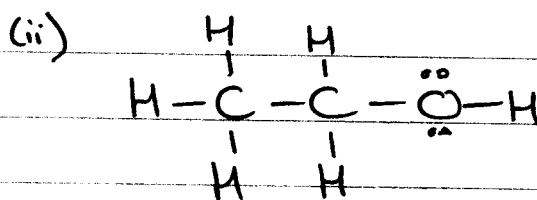
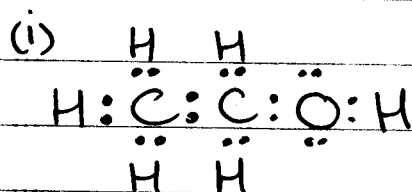
- (i) DIVIDE ORGANIC COMPOUNDS INTO CLASSES
- (ii) PROVIDE A BASIS FOR NAMING COMPOUNDS
- (iii) PREDICTABLE CHARACTERISTIC REACTIVITY

ALCOHOLS



ethanol

## DRAWING MOLECULES



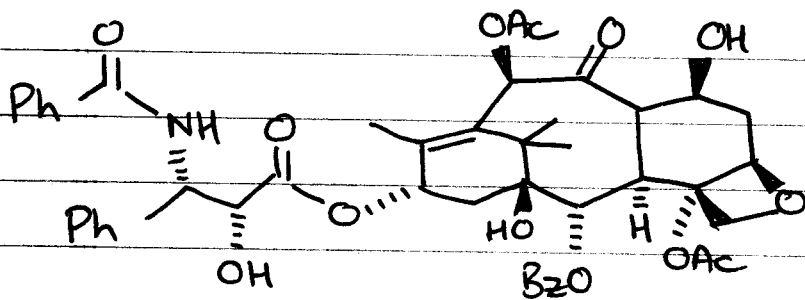
Line formula

Atoms other than C, H

5

⇒ HETEROATOMS

O, N, S, P, F, Cl, Br, I



TAXOL

- FUNCTIONAL GROUPS
- STEREOCHEMISTRY
- COMMON ABBREVIATIONS
- LINE FORMULAE

- most promising anti-tumor agent developed in three decades

1998 Sales \$1.2 BILLION

Where from - NOT LIKE IT GROWS ON TREES

Well, yes it does, BARK of PACIFIC YEW

Six 100 yr old trees → 1 patent  
(KILLS TREES)

- SYNTHESIS  $\Rightarrow$  making molecules

(6)



REACTIONS (A + B  $\rightarrow$  C)



MECHANISMS How IT WORKS

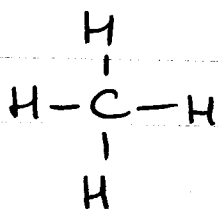
To figure all this out - need to understand molecules

← - STRUCTURE  
← - BONDING → ELECTRONS  
ORBITALS

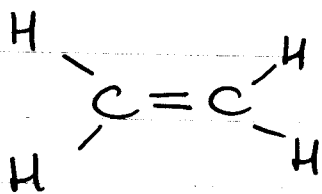
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NOT ABSOLUTE, BUT IN GENERAL  
(and in charge neutral species)

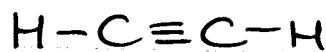
- H forms 1 BOND
- C forms 4 BONDS



methane  
(ALKANE)



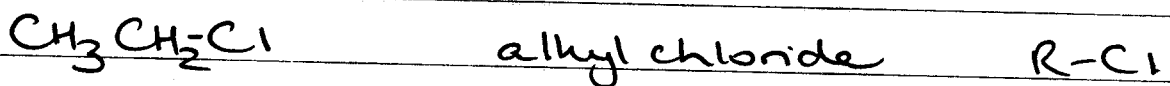
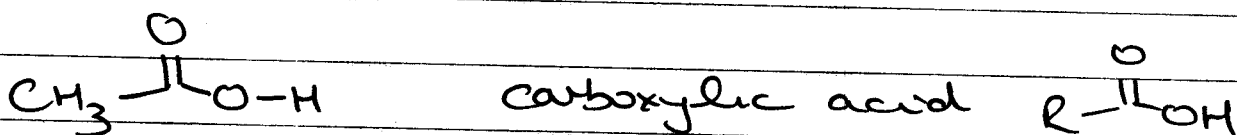
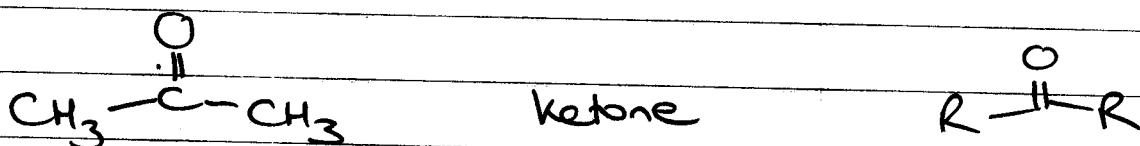
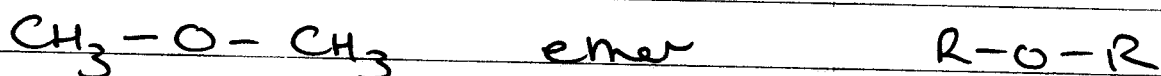
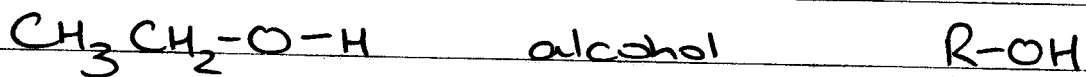
ethylene  
(ALKENE)



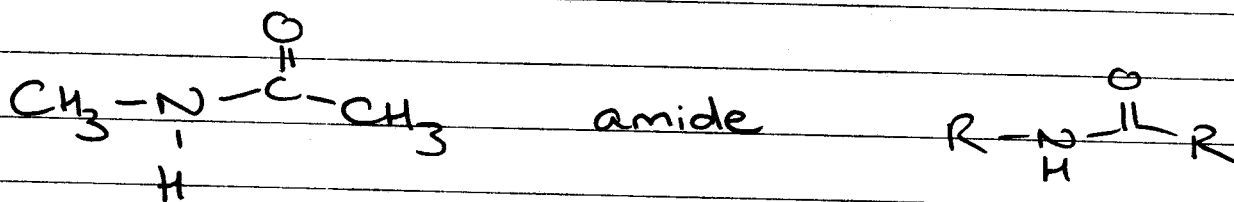
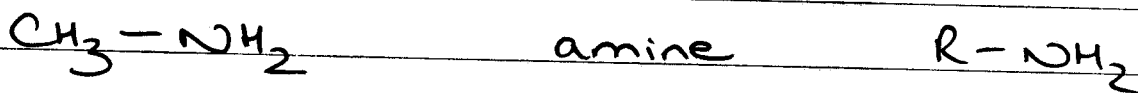
acetylene  
(ALKYNE)

- O forms 2 BONDS
- Hal forms 1 BOND  
(F, Cl, Br, I)

(7)



- N forms 3 BONDS



- S, P  $\Rightarrow$  variable.