First attempts at TopHat

Are you male or female?

A. Male
B. Female

First attempts at TopHat

Have you taken Chem 233 (i.e., Organic Chemistry I) previously?

A. Yes
B. No

First attempts at TopHat

What is your name?

What was your grade in Chem 116 (or the equivalent)?

A. “A”
B. “B”
C. “C”
D. “D”
E. “F”
F. “I”
G. I haven’t taken the course yet.

What was your grade in Organic I (i.e., Chem 233)?

A. “A”
B. “B”
C. “C”
D. “D”
E. “F”
F. “I”

First attempts at TopHat

Have you taken Chem 234 (i.e., Organic Chemistry II) previously?

A. Yes
B. No

What is your expected grade in this course (i.e., Chem 234)?

A. “A”
B. “B”
C. “C”
D. “D”
E. “F”
F. “I”

What is your professional goal? Why are you taking this course?

A. Biology Graduate School
B. Biochemistry
C. Chemical Engineer
D. Chemist
E. Environmental Science
F. Forensic Science
G. Law
H. Medical Doctor
I. Nutritionist
J. Optometrist
K. Pharmacist
L. Physical Therapy
M. Teaching
N. Veterinarian
O. Haven’t Decided Yet

How to Make an Appointment

- Google “John Penn WVU” and take the very first hit
- Follow the link for making an appointment
- DO NOT SELECT a time on Saturday or Sunday
- In class demo

john penn wvu - Goo × | Dr. John H. Penn ×

www.as.wvu.edu/~jpenn/

Apps | Dell Mini-Displ... | WVU eCampus ... | Novell WebAcc... | West Virginia U... | Sign in - Googl... | John Penn Teac...

John H. Penn Website

Home | Teaching | WE_LEARN | Research | Service

John H. Penn, Ph.D.

Teaching Web Page

- Curriculum Vitae

Professor
Chemistry Department
West Virginia University
P.O. Box 6045
Morgantown, WV 26506-6045
Telephone: 304-293-0915
Fax: 304-293-4904
E-Mail: John.Penn@mail.wvu.edu

President
Horizon Learning Solutions, LLC
1534 Point Marion Road
Morgantown, WV 26508
Telephone: unlisted
Fax: 304-599-5806
Email: jpenn@we-learn-horizon.com

The best way to see me is to arrange an appointment. Click on this link to arrange an appointment, email me at John.Penn@mail.wvu.edu, or see me right after class. My calendar is shown below.

Make an appointment

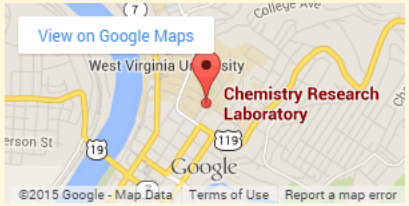
My office is 561 CRL (*i.e.*, the Chem Annex). Take the elevator to the 5th floor and find room 561.

Find Penn's Office

John Penn

Today | Jan 11 – 17, 2015 | Print | Week | Month | Agenda

	Sun 1/11	Mon 1/12	Sat 1/17
2pm	2p – 4:30p Chem 231 Lab Available Time	1:30p – 3p Available Time	1:30p – 11:3 Religious Observanc es
3pm		3p – 4p Lecture Preparatio	3p – 4p Lecture Preparatio
4pm	4:30p – 5:30 Organic Seminar	4p – 5:30p Chem 233 Organic Chemistry	4p – 5:30p Chem 233 Organic Chemistry
5pm		5:30p – 7:30 Chem 790 Teaching Practicum	
6pm			
7pm			
8pm			



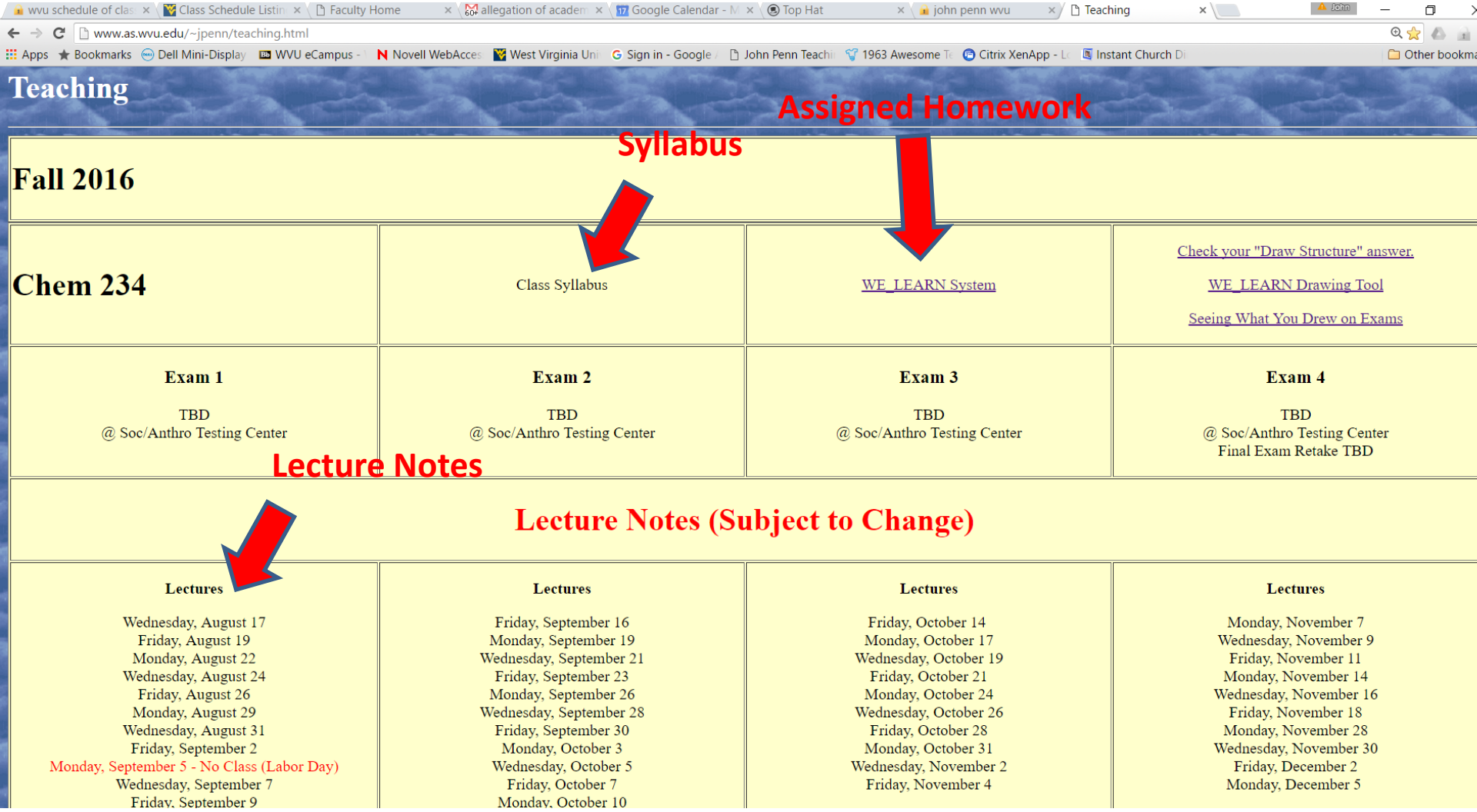
View Larger Map

Order of Coverage (Exam 1)

	Homework Assignment	Due Date
1	B4-11-01 IR Functional Groups (wDeadline)	Tuesday, August 23
2	B7-14-02 Mass Spec - Molecular Ion (wDeadline)	Wednesday, August 24
3	B7-14-03 Mass Spec - Isotope Effects (wDeadline)	Thursday, August 25
4	B7-15-01 Number of Peaks 1H NMR Spectra (wDeadline)	Friday, August 26
5	B7-15-06 Number of Peaks 13C NMR (wDeadline)	Saturday, August 27
6	B7-15-02 Theoretical NMR Chemical Shift (wDeadline)	Sunday, August 28
7	B7-15-03 Theoretical NMR Integration (wDeadline)	Monday, August 29
8	B7-15-04 Theor. NMR Spin-Spin Splitting (wDeadline)	Tuesday, August 30
9	B7-15-05 NMR Spectroscopy Problems (wDeadline)	Wednesday, August 31
10	B7-15-07 13C NMR Structure ID (wDeadline)	Thursday, September 1
11	B7-13-01A Nomenclature Alkyl Halides (wDeadline)	Friday, September 2
12	B7-13-01B Alkyl Halide Nomenclature (wDeadline)	Saturday, September 3
13	B7-13-02A Halogenation of Alkanes (wDeadline)	Sunday, September 4
14	B7-13-02B Halogenation of Alkanes (wDeadline)	Monday, September 5

Order of Coverage (Exam 1)

	Homework Assignment	Due Date
15	B7-13-03A Oxidation and Anti-oxidants (wDeadline)	Tuesday, September 6
16	B7-19-01 Aromaticity (wDeadline)	Wednesday, September 7
17	B7-19-02B Arene Nomenclature (wDeadline)	Thursday, September 8
18	B7-19-03A Halogenation of Arenes (wDeadline)	Friday, September 9
19	B7-19-03B Halogenation of Arenes (wDeadline)	Friday, September 9
20	B7-19-04A Arene Rxns Inorganic Acids (wDeadline)	Saturday, September 10
21	B7-19-04B Arene Rxns Inorganic Acids (wDeadline)	Saturday, September 10
22	B7-19-05A Friedel-Crafts (wDeadline)	Sunday, September 11
23	B7-19-05B Friedel-Crafts (wDeadline)	Sunday, September 11
24	B7-19-06 Arene Mechanistic Issues (wDeadline)	Wednesday, September 12
25	B7-19-06B Arene Mechanisms (wDeadline)	Wednesday, September 12
26	B7-19-07A Nucleophilic Aromatic Subs (wDeadline)	Thursday, September 13
27	B7-19-07B Nucleophilic Aromatic Subs (wDeadline)	Friday, September 14
	Exam 1	**September 18, 19, 20**



Scroll down for more information, as can be seen on the next slide.

Electromagnetic Spectrum

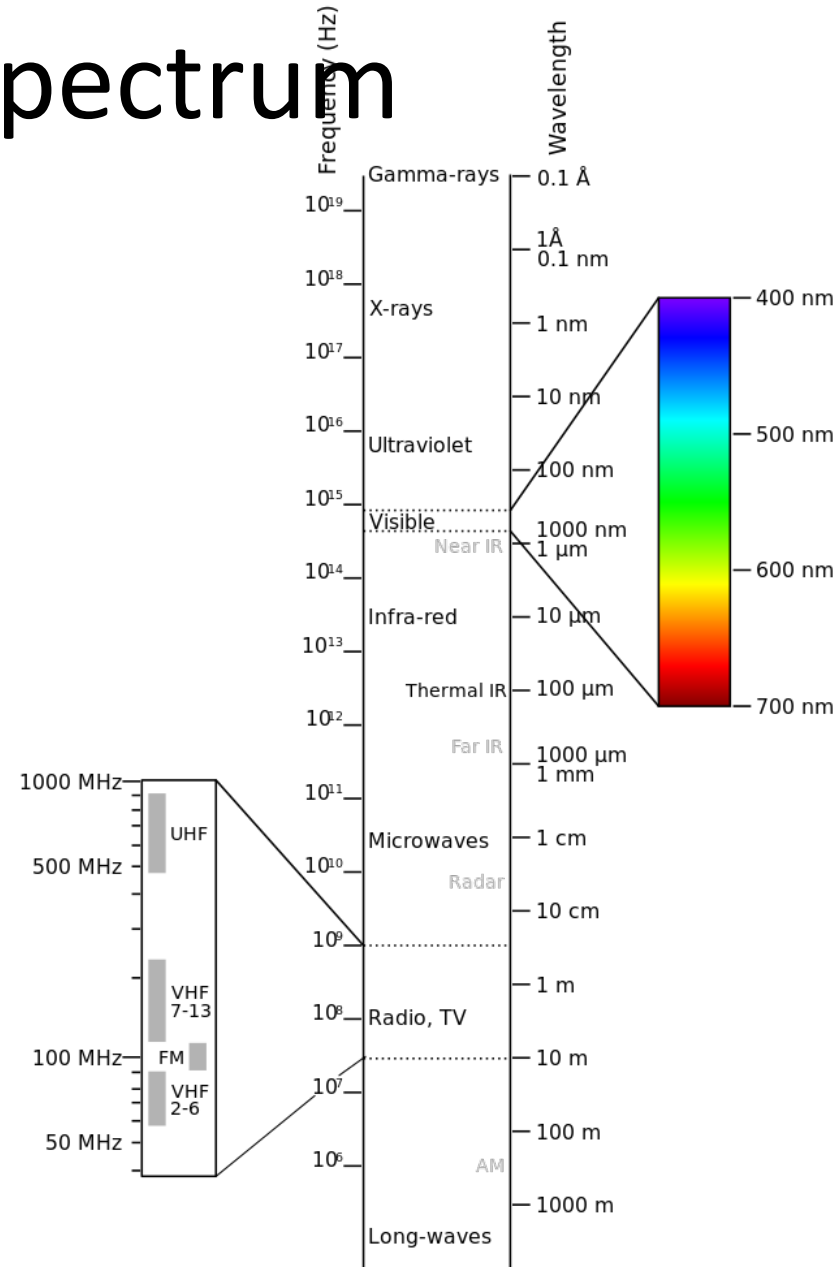
- $f = c/\lambda$

  or

- $f = E/h$

  or

- $E = hc/\lambda$
- Where *c* is the speed of light
- And *h* is Planck's constant

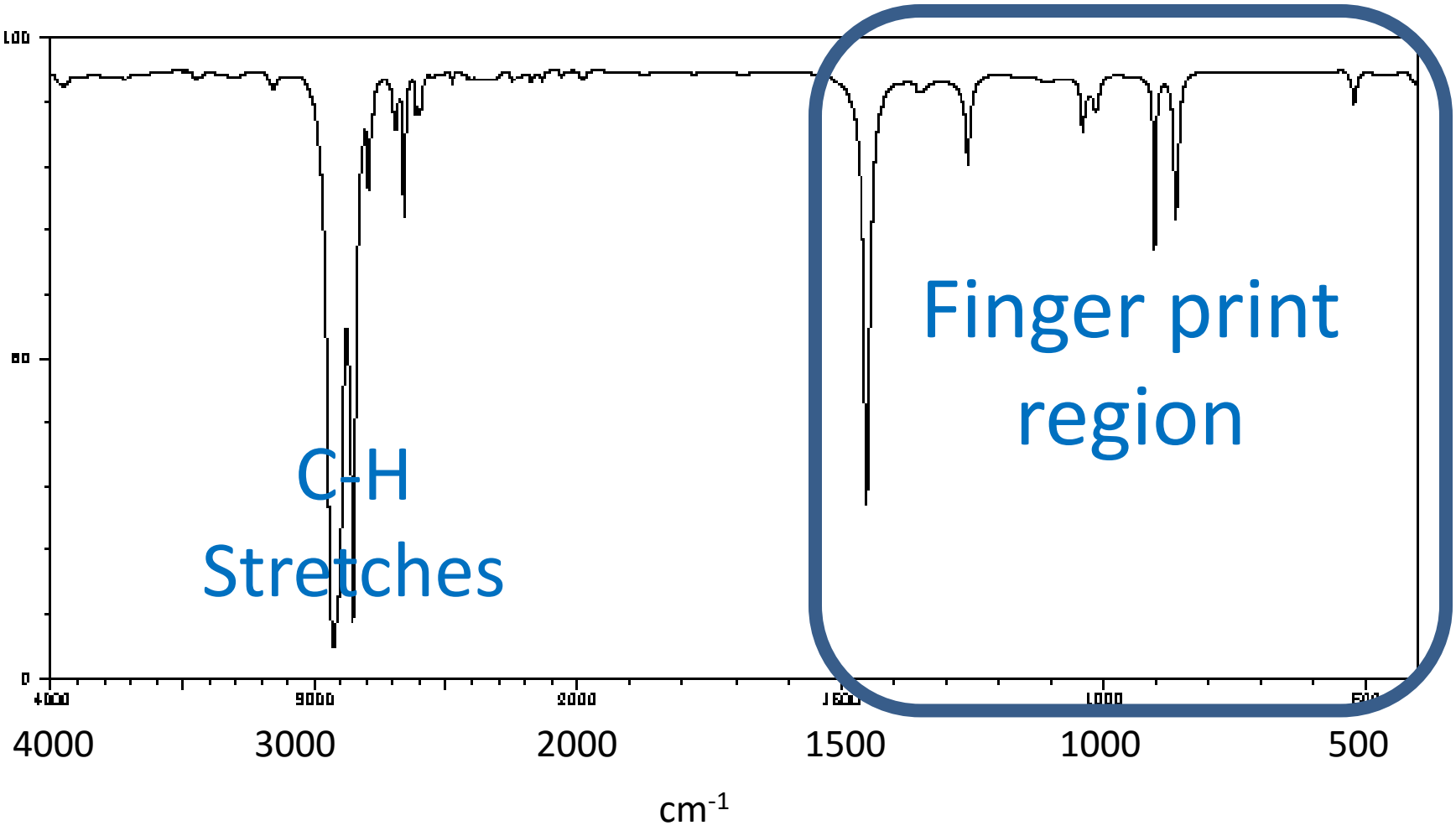


Visualization of Vibrations

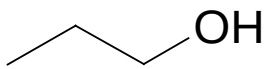
All links on this page accessed on 8/18/2016

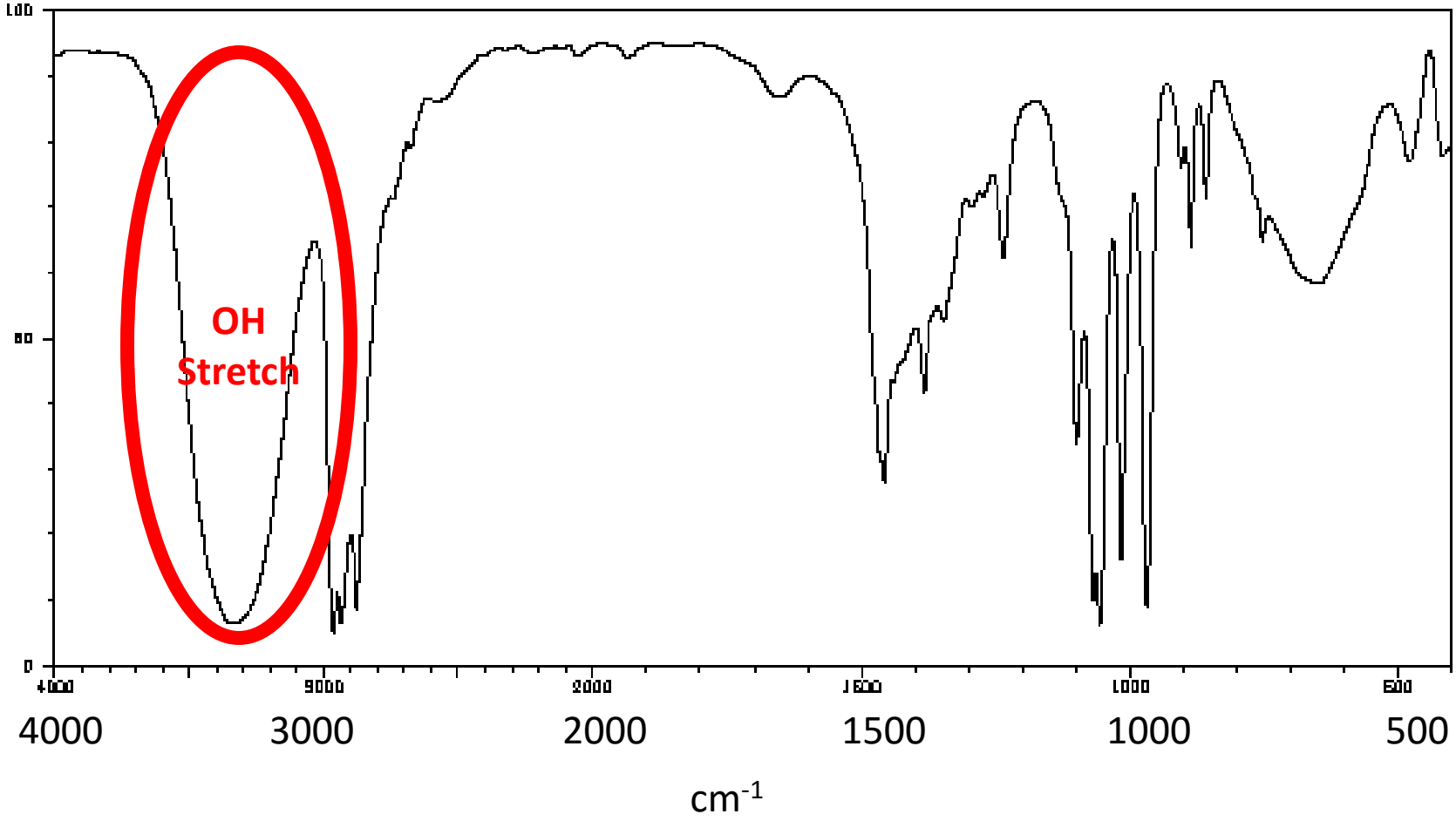
- CH_2Cl_2
  - IRmodes.html
- Dichloroethene
  - demos/DCE.html
- H_2O, CO_2, and Adamantane
  - chemtube3d
- Quite a few molecules
  - demos/

Cyclohexane

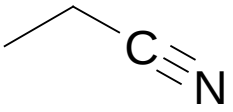


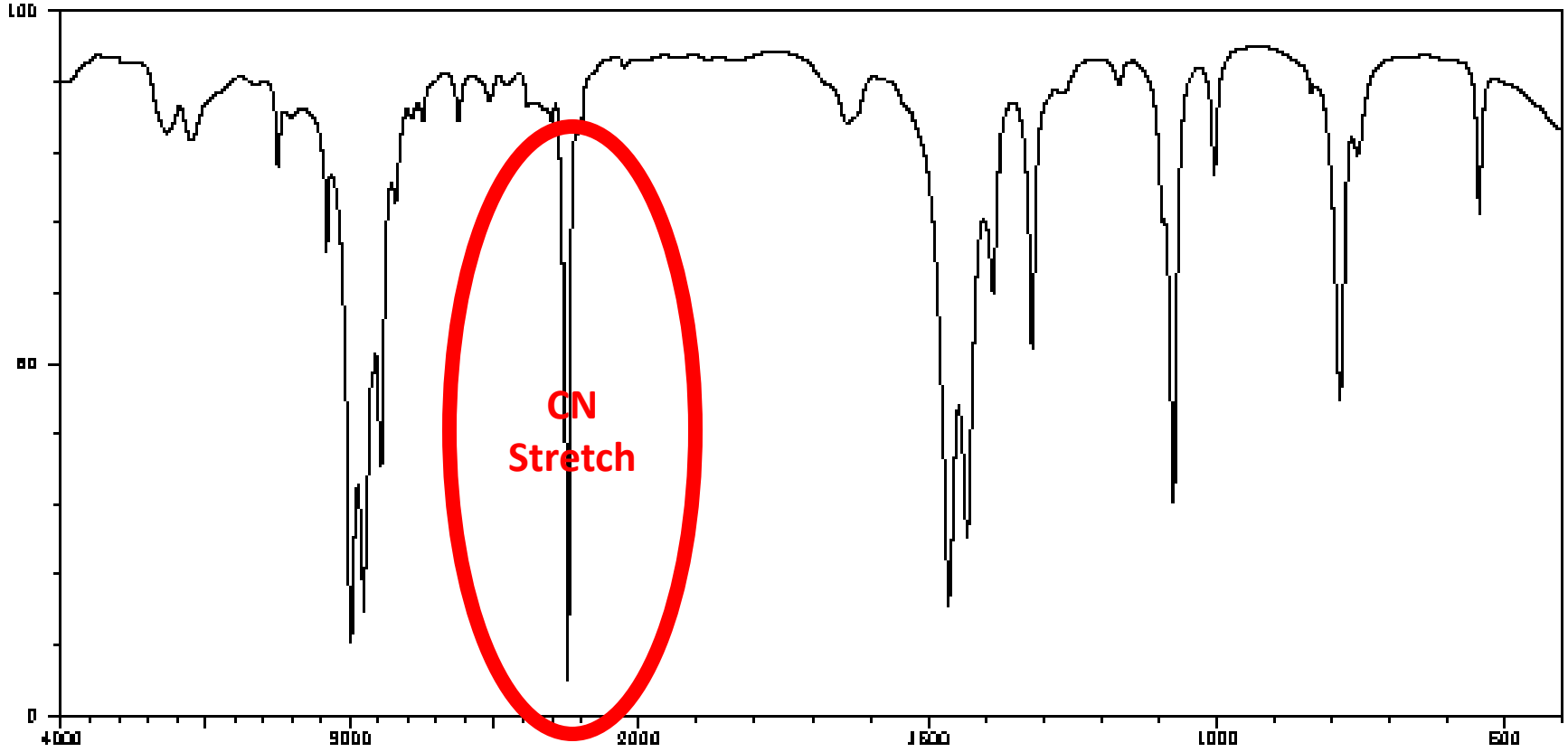
1-Propanol





Propanenitrile

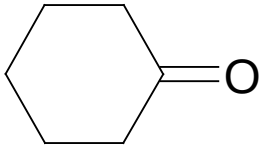


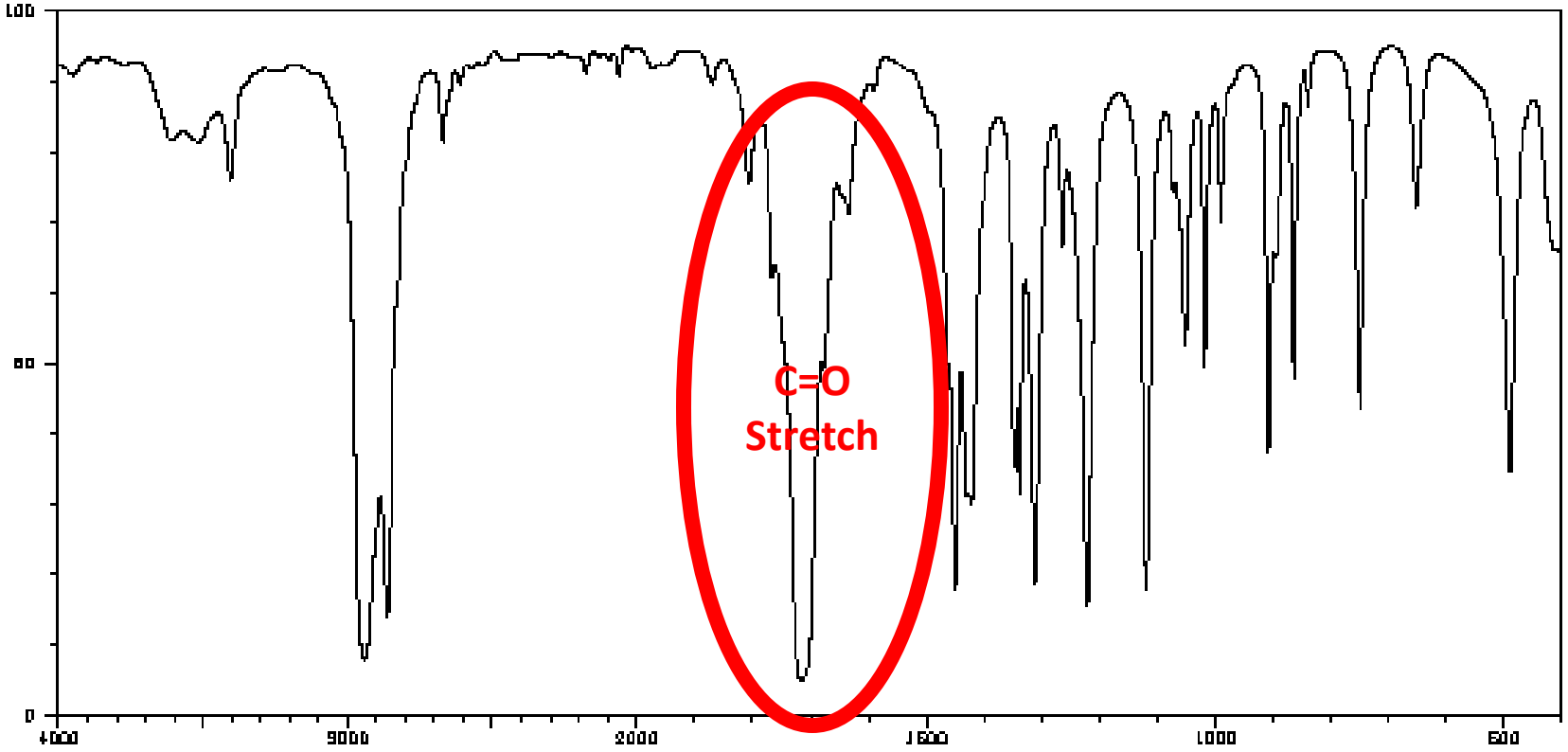


4000 3000 2000 1500 1000 500

cm^{-1}

Cyclohexanone

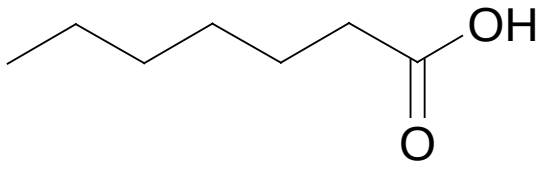


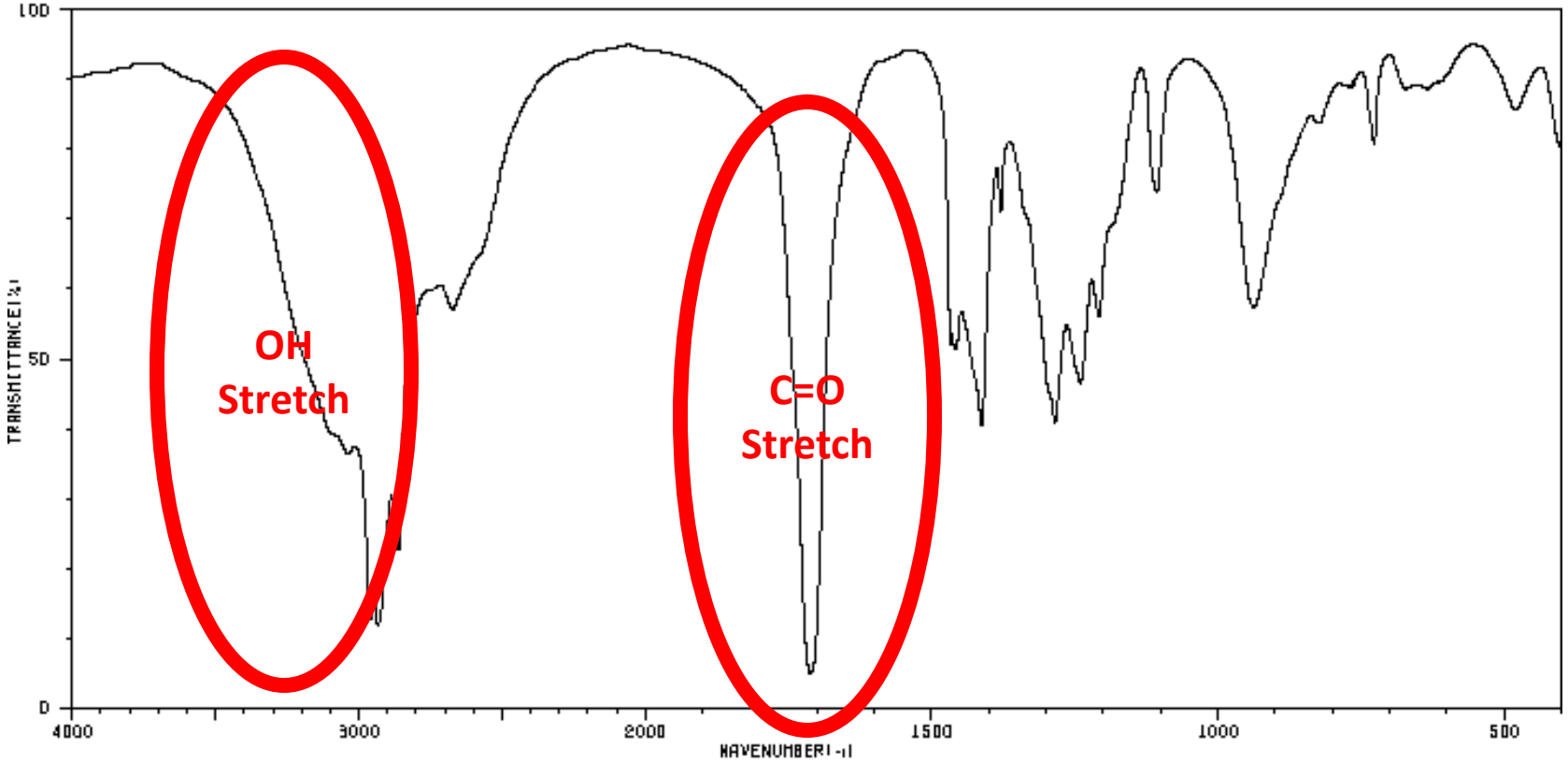


4000 3000 2000 1500 1000 500

cm^{-1}

Heptanoic acid

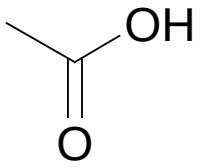


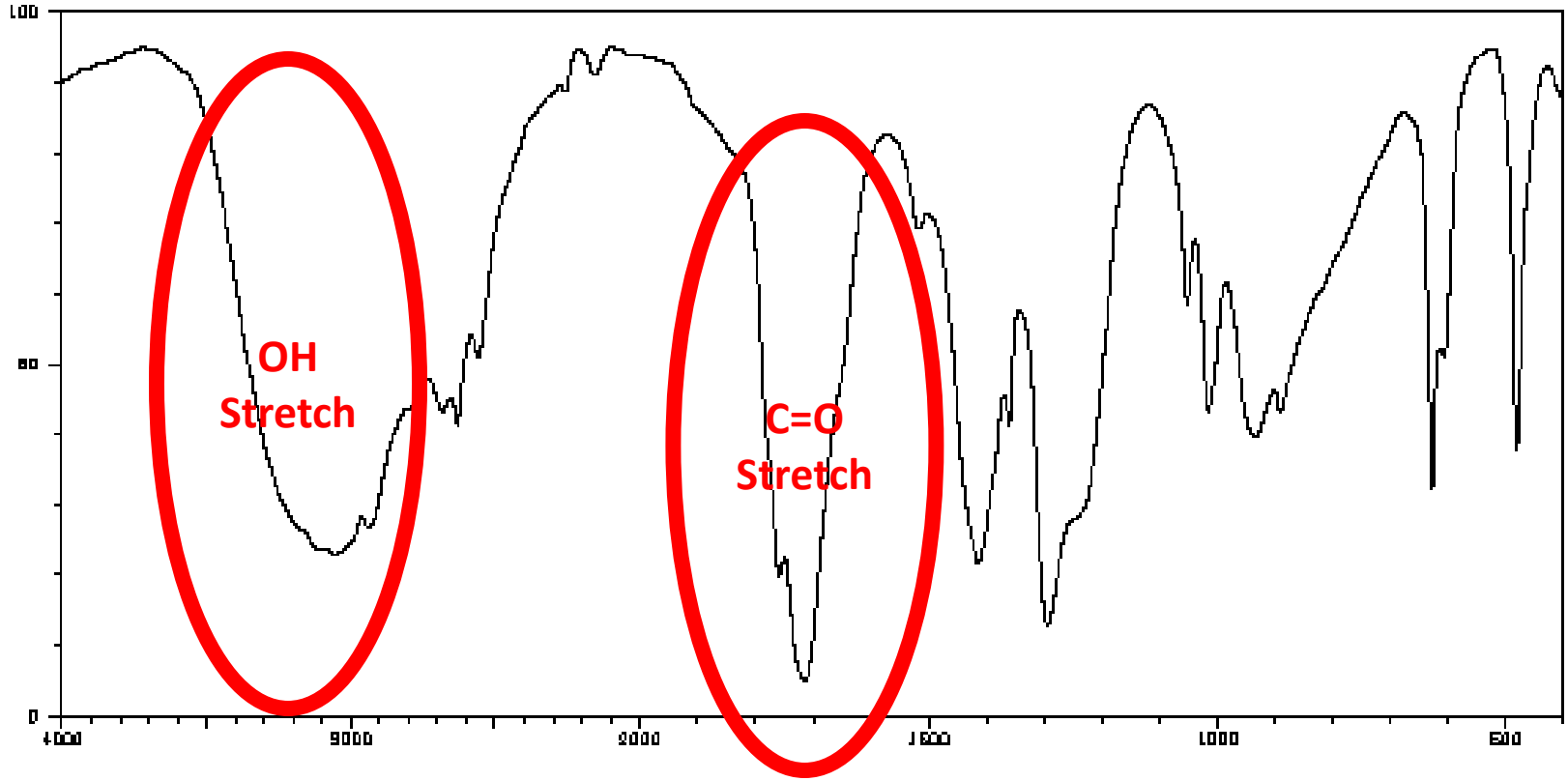


4000 3000 2000 1500 1000 500

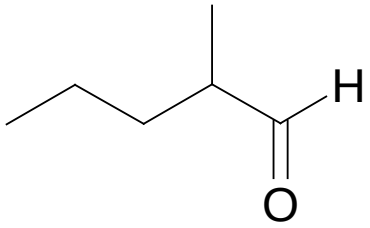
cm^{-1}

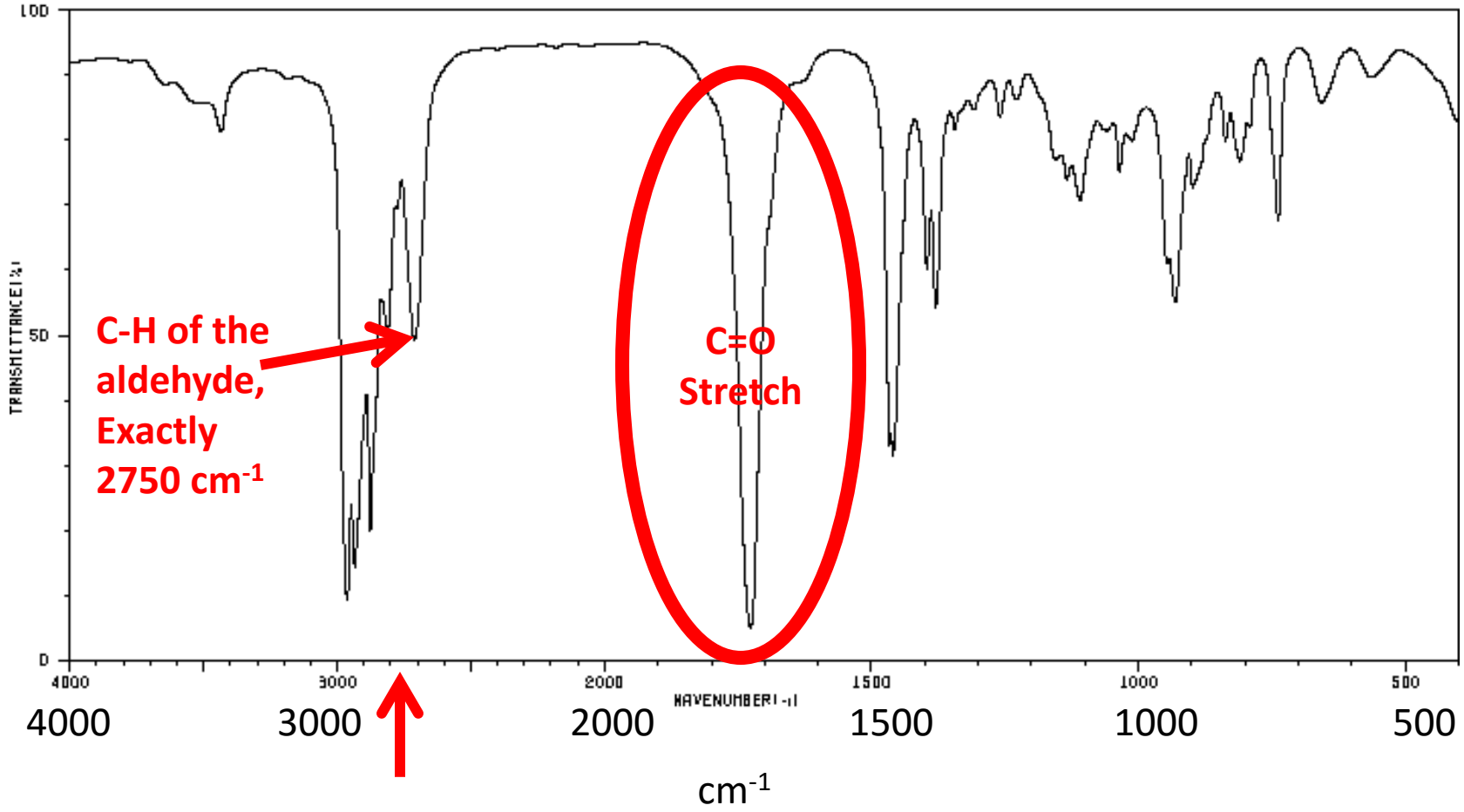
Ethanoic acid



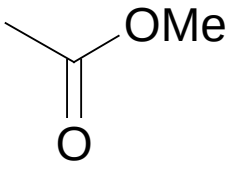


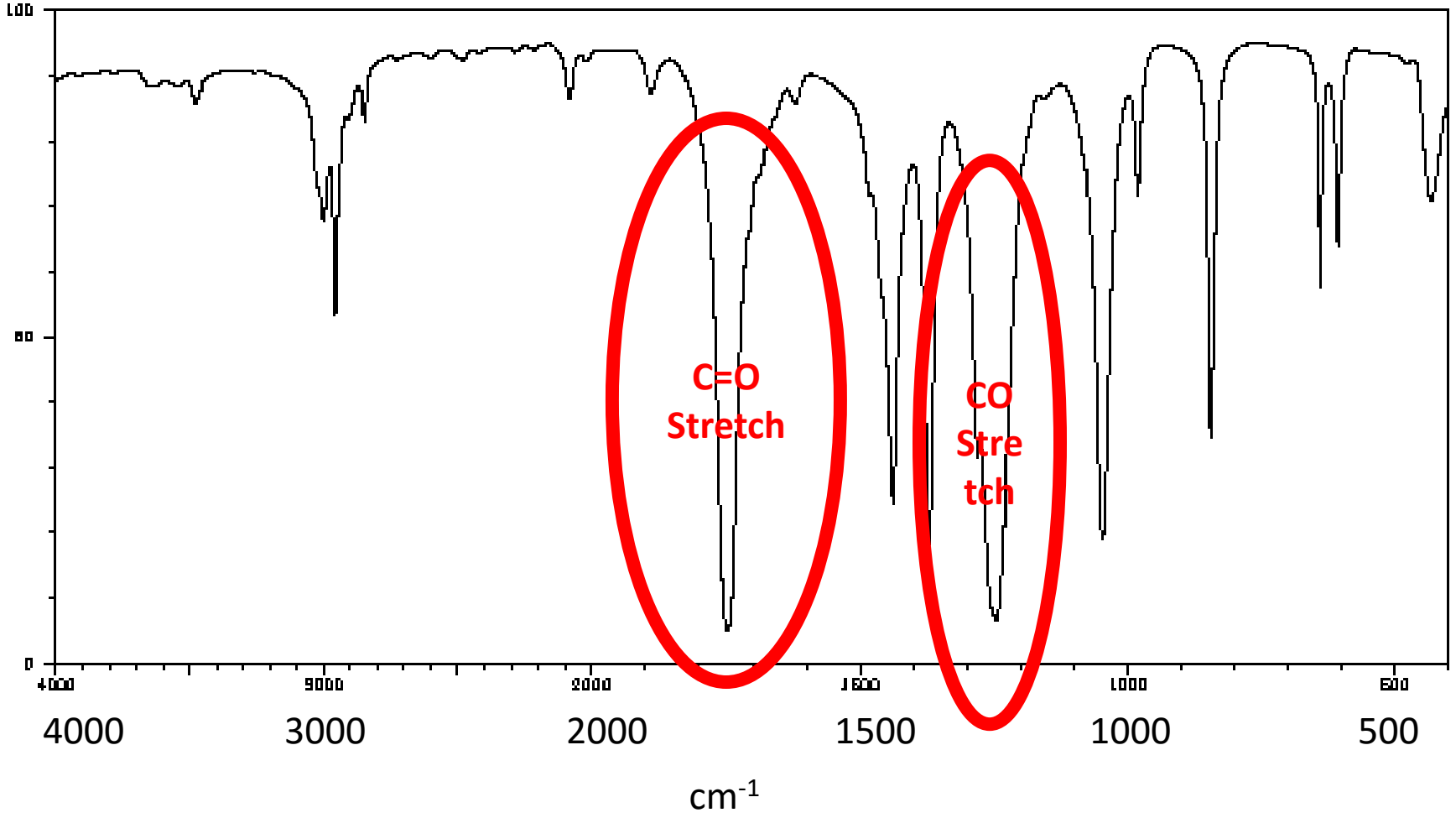
2-Methylpentanal



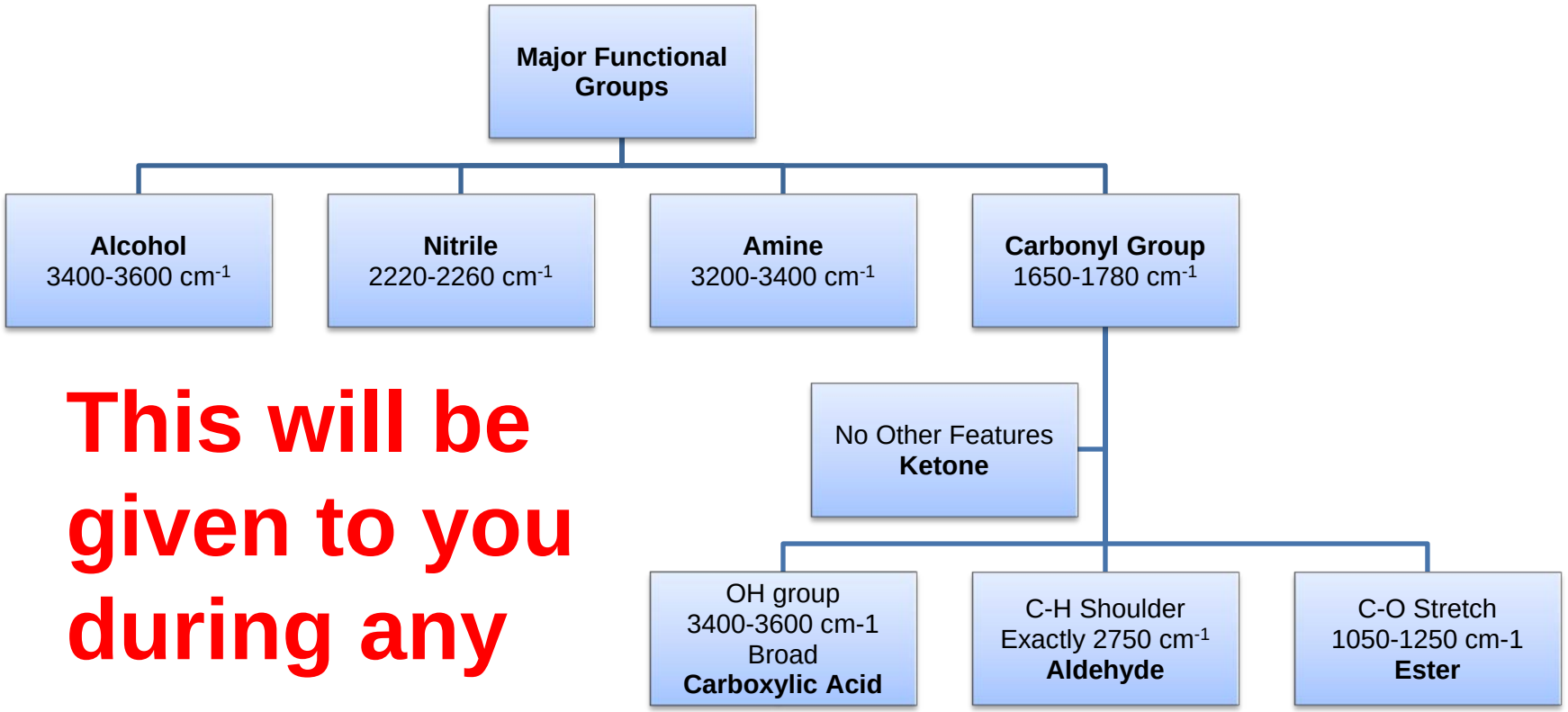


Methyl Ethanoate



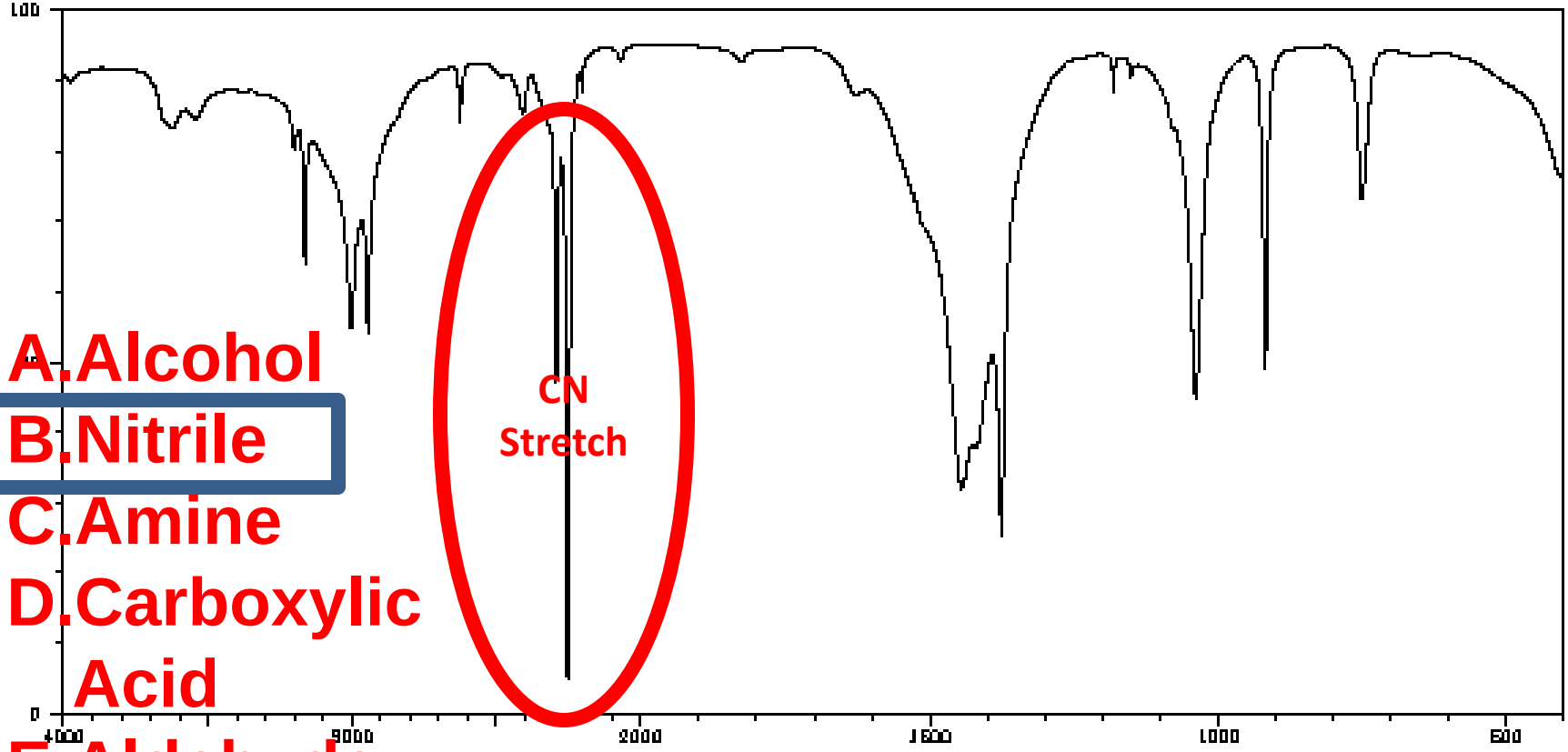


Interpreting IR Spectra



This will be given to you during any exam.

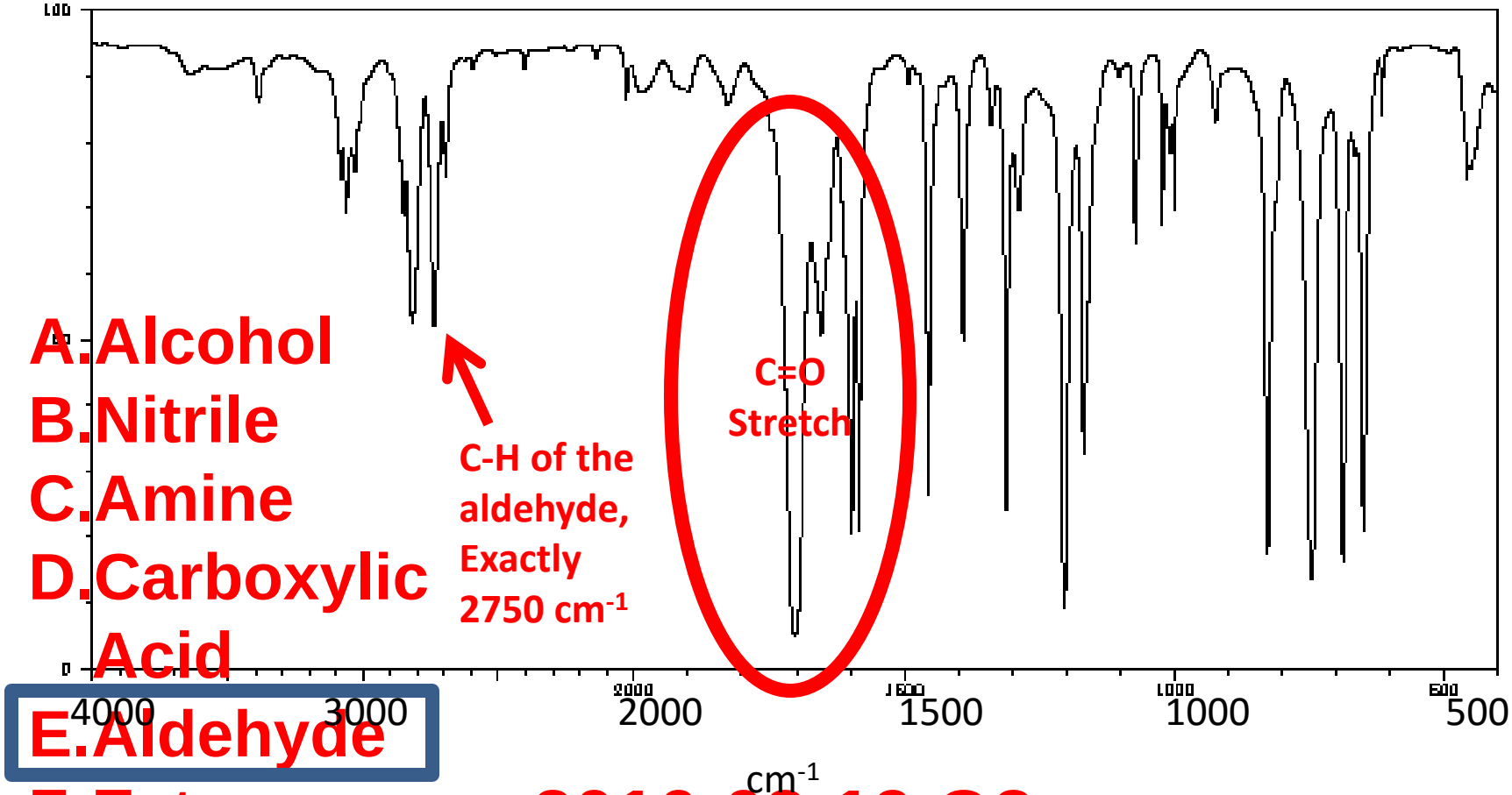
What functional groups?



A. Alcohol
B. Nitrile
C. Amine
D. Carboxylic Acid
E. Aldehyde
F. Ester
G. Ketone

2010-08-19 Q2

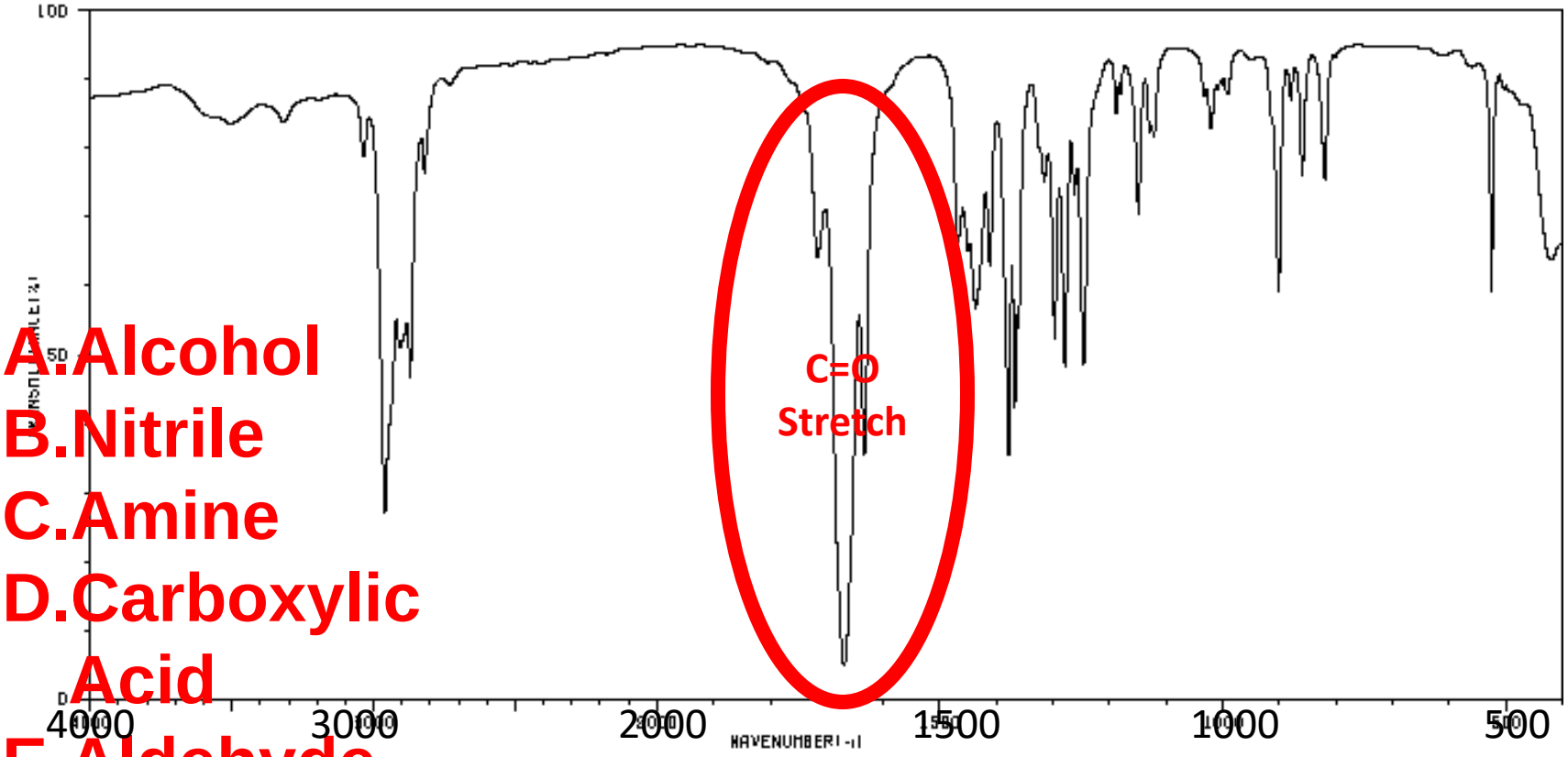
What functional groups?



A. Alcohol
B. Nitrile
C. Amine
D. Carboxylic Acid
E. Aldehyde
F. Ester
G. Ketone

2016-08-19 Q3

What functional groups?

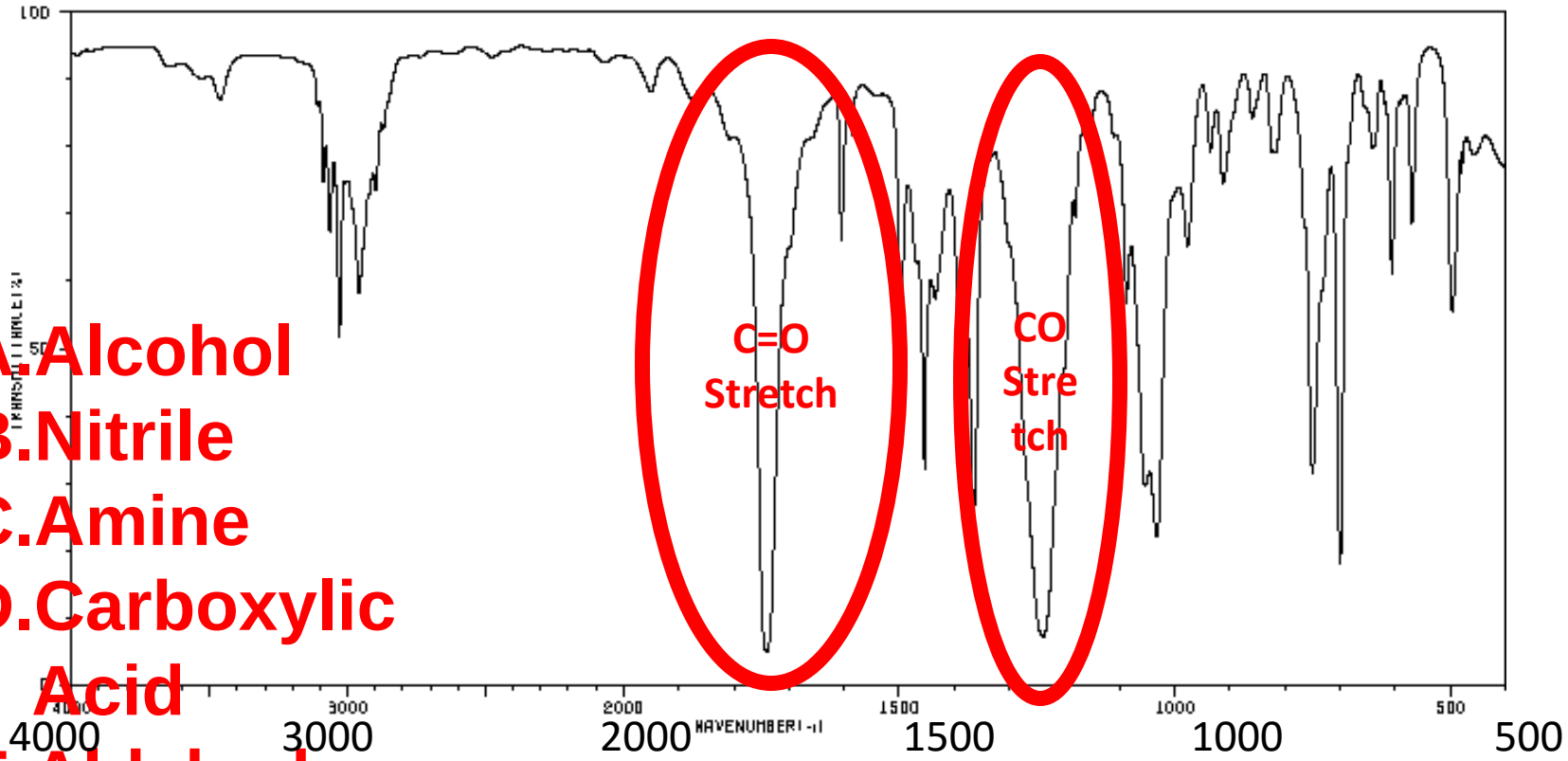


A. Alcohol
B. Nitrile
C. Amine
D. Carboxylic Acid
E. Aldehyde
F. Ester
G. Ketone

cm^{-1}

2016-08-19 Q4

What functional groups?



cm^{-1}

A. Alcohol
B. Nitrile
C. Amine
D. Carboxylic Acid
E. Aldehyde
F. Ester
G. Ketone

2016-08-19 Q5