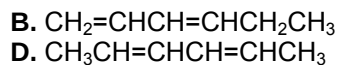
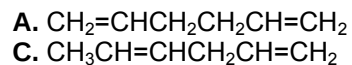


E5 practice i

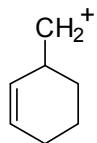
1. (32 points) Circle the letter *on the right* which corresponds to the answer to each question. There is only one correct answer for each question.

(i) Which of the following dienes reacts with bromine in CCl_4 to yield 2,5-dibromo-3-hexene?

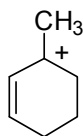


A
B
C
D

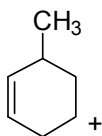
(ii) Which of the following carbocations is most stable?



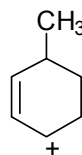
E



F



G



H

E
F
G
H

(iii) How many electrons does the allyl radical have in p orbitals?

I. 2

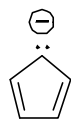
J. 3

K. 4

L. 5

I
J
K
L

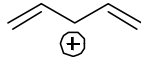
(iv) Which of the following ions is aromatic?



M



N



O



P

M
N
O
P

(v) In the first step of the mechanism for the addition of HBr to 1,3-butadiene, which of the following terms best describes the reactivity of the diene?

Q. acid

R. base

S. electrophile

T. nucleophile

Q
R
S
T

(vi) Which of the following undergoes the most rapid bromination with N -bromosuccinimide?

U. propane

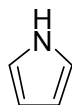
V. ethene

W. 1,3-butadiene

X. propene

U
V
W
X

(vii) Which of the following molecules is *not* aromatic?



Y.



Z.



AA.



BB.

Y
Z
AA
BB

(viii) Which of the following is the most stable diene?

CC. 1,2-hexadiene

DD. 1,3-hexadiene

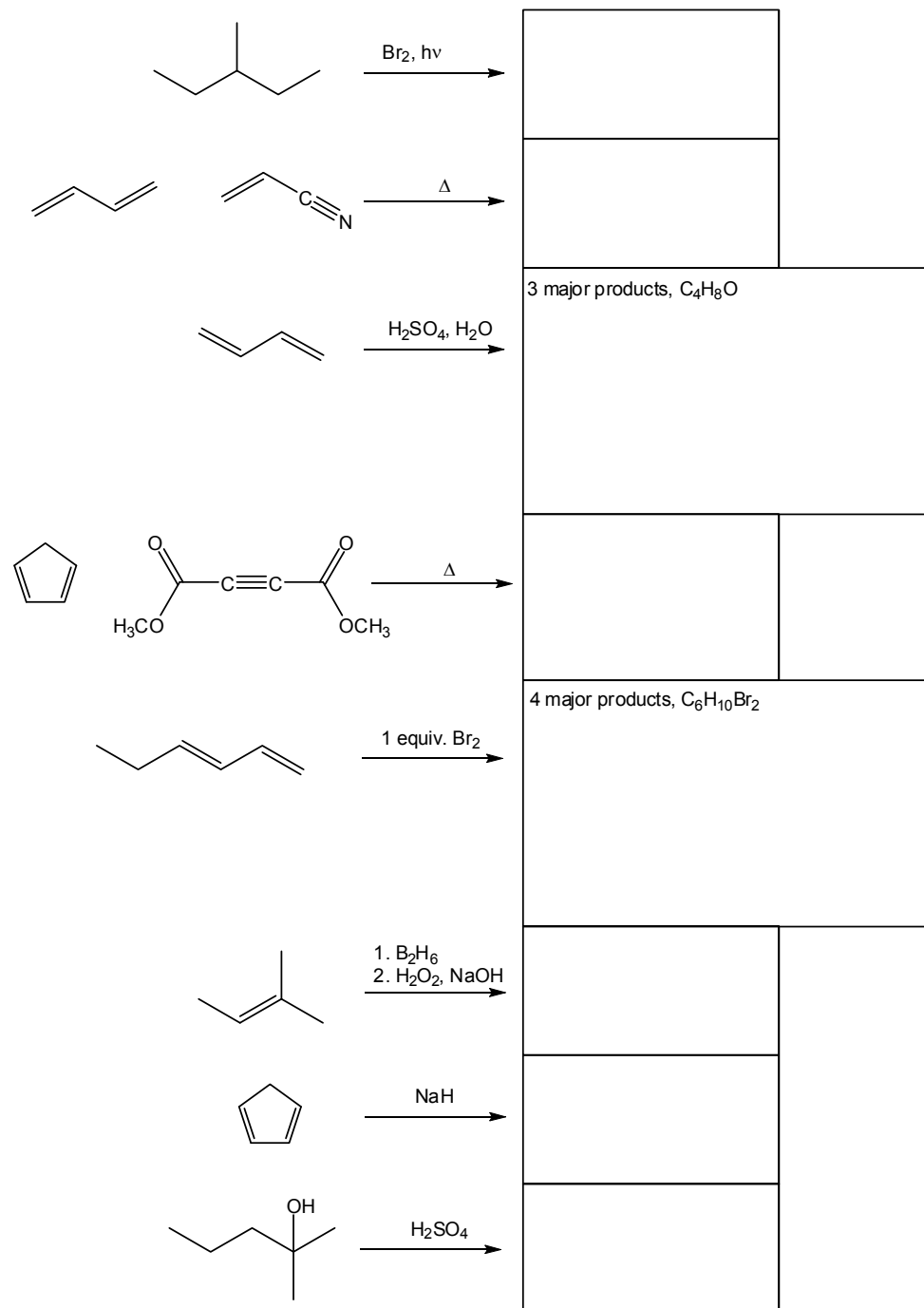
EE. 1,4-hexadiene

FF. 1,5-hexadiene

CC
DD
EE
FF

2. (38 points)

(a) Provide the structure of the major organic products of the following reactions.



(b) Explain why the rate of radical bromination is: 1,4-pentadiene > 1-pentene > pentane

3. (30 points) The following transformations cannot be completed in a single step. Provide a sequence of reactions to perform each transformation, showing the reagents and structures of *all isolated synthetic intermediates*. The synthesis must use the given starting materials; you may also use any other starting materials with 3 or fewer carbon atoms. You may use any reagents. Do *not* show mechanisms or the structures of reactive intermediates. Shorter, more efficient syntheses are preferred; overly long or inefficient sequences will lose some credit.

