

Q	X	Name (First, MI, Last):
1		Student ID Number:
2		Circle the name of your TA: AL CARI ROB
3		Discussion Section – Day: Time:
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20		Answer if E:

Chem 30B Fall 2003

QUIZ #2
(15 Min)

Monday November 3rd

*INTERPRETATION OF THE QUESTIONS
IS PART OF THE EXAM – DO NOT ASK
FOR THE QUESTIONS TO BE
EXPLAINED TO YOU*

*USE CAPITAL LETTERS WHEN FILLING
IN THE BOXES AND BE CLEAR – IF WE
CAN'T FIGURE OUT WHAT A LETTER
IS, IT WILL AUTOMATICALLY BE
GRADED AS INCORRECT*

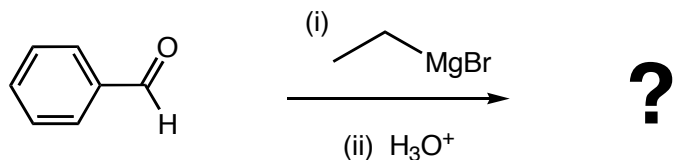
****DO NOT OPEN THIS EXAM UNTIL
INSTRUCTED TO DO SO****

TOTAL = / 36

"I love deadlines. I like the whooshing sound they make as they fly by." - Douglas Adams

Questions 1–18 are worth 2 points each:

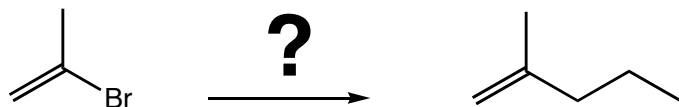
1.



The product of the Grignard reaction shown above is best described as:

- A** Meso **B** (*R*) **C** (*S*) **D** Achiral **E** Racemic

2.



What is the best reagent for the transformation shown above?

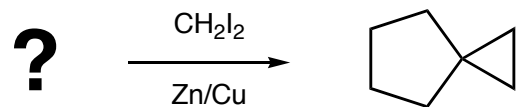
- A** $\text{CH}_3\text{CH}_2\text{CH}_2\text{CuLi}$ **B** $\text{CH}_3\text{CH}_2\text{CH}_2\text{Li}$ **C** $\text{CH}_3\text{CH}_2\text{CH}_2\text{PPh}_3$ **D** $\text{CH}_3\text{CH}_2\text{CH}_2\text{MgI}$ **E** $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$

3. The ruthenium (Ru) catalyst used for alkene metathesis contains a:

- A** $\text{Ru}-\text{C}$ (single bond) **B** $\text{Ru}=\text{C}$ (double bond)
C $\text{Ru}\equiv\text{C}$ (triple bond) **D** $\text{Ru}\equiv\equiv\text{C}$ (quadruple bond)

E No $\text{Ru}-\text{C}$ bonds whatsoever

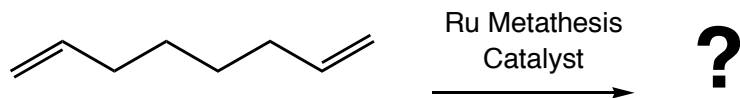
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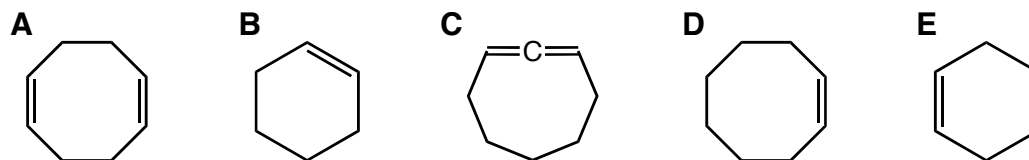
The starting material necessary for this transformation is:

- A** $\text{Cyclopentane-CH}_2\text{CH}_2\text{I}$ **B** $\text{Cyclopentane-epoxide}$ **C** Cyclopentene **D** Cyclopentanone **E** Cyclopentadiene

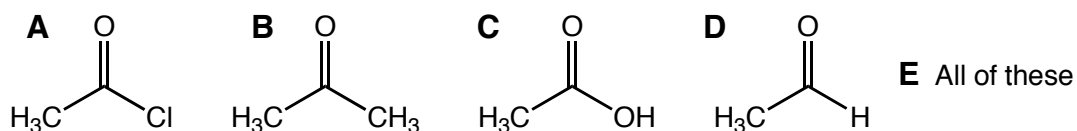
5.



The reaction shown above gives which product:



6. Which of these compounds is a ketone:



7.



One of the products formed in the reaction between propylmagnesium bromide and a thiol (shown above) is:

A An Alkene **B** An Alkyne **C** A Ketone **D** An Alkane **E** A Sulfoxide

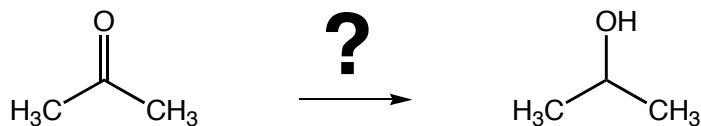
8. The carbon atom bonded to the magnesium atom of a Grignard reagent is best described as:

A Electrophilic **B** Oxidative **C** Electropositive **D** Organometallic **E** Nucleophilic

9. The reaction of a secondary amine with a ketone results in the formation of:

A An Imine **B** An Amine **C** An Enamine **D** A Schiff Base **E** An Amide

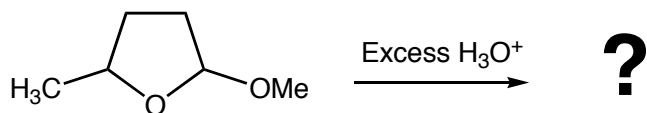
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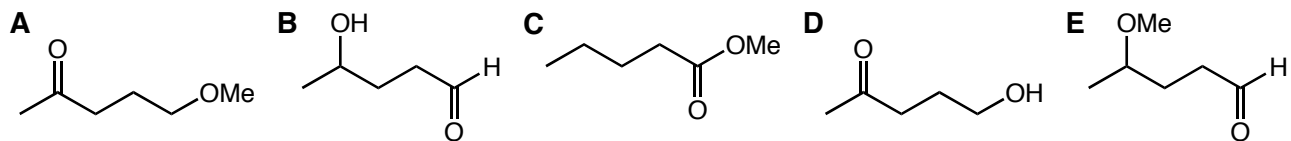
Propanone can be reduced to 2-propanol using which of the following reagents:

A LiAlH_4 **B** Zn/HCl (Clemmensen) **C** $\text{KOH/H}_2\text{NNH}_2$ (Wolff-Kishner) **D** All of them **E** None of them

11.



The major product of the reaction shown above is:



12. Which of the following combinations results in the formation of a Gilman reagent:

- A** Alkyl bromide + Cu **B** Alkyl bromide + CuI **C** Alcohol + CuI **D** Alkyl lithium + CuI **E** Alkene + Cu

13. The 4-membered cyclic intermediate formed during the Wittig reaction is called:

- A** An Oxaphosphetane **B** An Ylid **C** A Betaine **D** A Cyclic Phosphate **E** A Metallocyclobutane

14. The hybridization of the carbon atom of a carbonyl group is best described as:

- A** sp **B** sp² **C** sp³ **D** sp⁴ **E** It's not hybridized

15.



How many DIFFERENT combinations of ketone and Grignard reagent can be reacted together to make 3-methyl-3-pentanol:

- A** 5 **B** 4 **C** 3 **D** 2 **E** 1

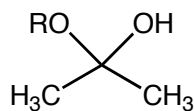
16. The Wittig reaction converts a ketone into:

- A** An Alkene **B** An Alkyne **C** An Epoxide **D** An Alkane **E** An Aldehyde

17. Reaction of an organolithium reagent with an aldehyde gives:

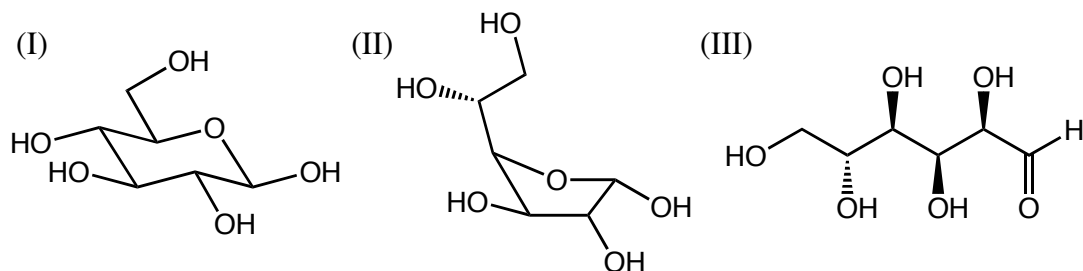
- A** An Alcohol **B** A Ketone **C** An Ether **D** An Epoxide **E** A Carboxylic Acid

18. The compound pictured below is:



- A** A Ketal **B** A Hydrate **C** An Acetal **D** A Hemiacetal **E** A Hemiketal
-

19. **EXTRA CREDIT** (3 points):



When D-Glucose is dissolved in water, it is present in solution as:

- A** I **B** II **C** III **D** I and II **E** II and III **F** I and III **G** I, II and III **H** None of the above
-

20. **BONUS QUESTION** (2 points): In YOUR OPINION, which ONE of the following 20th Century breakthroughs in science or technology has the most profound implications for the future of the human race?

- A** Elucidation of the DNA double helix and decoding of genomes
- B** The invention of the computer
- C** The splitting of the atom
- D** Man escaping the confines of Earth and, for example, landing on the Moon
- E** Something else (write your answer on the cover page if you pick **E**)