QUESTION 1
MC33b

Which best describes the product of the following reaction sequence?

1. HBr/ROOR
2. NaCN/DMF
3. 1 Equiv. MeMgBr
4. H$_3$O$^+$

Which best describes the product of the following reaction sequence?
Which best describes the product of the following reaction sequence?

1. PCC
2. MeMgBr
3. H_3O^+
4. Na_2Cr_2O_7/H_2SO_4
QUESTION 3
MC33e

Which best describes the product of the following reaction sequence?

1. Excess PCC/CH₂Cl₂ (solvnt)

2. 1 Equiv. / HCl (cat.)

3. Excess PhMgBr.THF

4. H₃O⁺

5. Na₂Cr₂O₇/H₂SO₄/H₂O
**QUESTION 4**

MC33f

Which best describes the product of the following reaction sequence?

1. BuLi
2. MeBr
3. H$_3$O$^+$
4. Na$_2$Cr$_2$O$_7$/H$_2$SO$_4$

A) O
B) COOH
C) O
D) OH

\[ \text{BuLi} \quad \text{MeBr} \quad \text{H}_3\text{O}^+ \quad \text{Na}_2\text{Cr}_2\text{O}_7/\text{H}_2\text{SO}_4 \]
QUESTION 5
MC33r

Which is a correct IUPAC name for the following structure?

A  (5S)-hydroxycyclohex-2-enone
B  (5S)-hydroxycyclohexen-2-one
C  (5R)-hydroxycyclohex-2-enone
D  (5S)-hydroxycyclohex-2-eneone

lowest # for substituent is the alkene
ketone takes priority

(5S)-hydroxycyclohex-2-enone
QUESTION 6
MC33n

Select the best reagents and conditions to perform the following ketone synthesis

1. BuLi  1. Excess BuLi  1. BuLi  1. BuLi
2. PrBr  2. EtBr  2. PrBr  2. EtBr
6. H₃O⁺

A  B  C  D

A

1. BuLi
2. PrBr
3. H₃O⁺
4. BuLi
5. BuBr
6. H₃O⁺

the thiane will get hydrolyzed here, and the overall reaction sequence will thus stop here

this stuff doesn't do anything!

B

1. Excess BuLi
2. EtBr
3. PrBr
4. H₃O⁺

excess BuLi will not be able to deprotonate twice on the same carbon atom, once one proton has been removed, removing the second is MUCH harder since you are now trying to deprotonate an anion, thus only the PrBr adds

AND, adding an ethyl group isn't useful anyway!

D

1. BuLi
2. EtBr
3. BuLi
4. PrBr
5. H₃O⁺

nothing really wrong with this, it just adds the wrong alkyl groups and makes the wrong ketone
QUESTION 7

Give the best product for the following reaction

1. 1 Equiv. PhMgBr
2. H$_3$O$^+$

the 1 equivalent of phenylmagnesium bromide must "choose" between the aldehyde and the ketone

aldehydes are more reactive than ketones, ketones have two weak donating alkyl groups to stabilize the partial positive charge on the carbon of the C=O bond, aldehydes only have one

neither donating or withdrawing

weak donating

weak donating

BrMg$\rightleftharpoons$Ph

H

Ph

OMgBr

H$_3$O$^+$
QUESTION 8
MC33d

Which best describes the product of the following reaction sequence?

1. Excess PCC
2. Excess PhMgBr·THF