QUESTION 1
Grignardsa

Give the structure that you would use with the provided Grignard reagent to give the provided product.

\[ \text{MgBr} \quad 1. \quad ??? \quad 2. \quad \text{H}_2\text{O}^+ \]

A

B

C

D

A

B

C

D
QUESTION 2
MC29g

Give the product of the following reaction sequence with the starting material shown:

1. $\text{Br}_2 / \text{hv}$
2. Mg.THF
3. [ediagram]
4. $\text{H}_3\text{O}^+$

A

B

C

D

[ediagram]
QUESTION 3
Grignardsb
Give the structure that you would use with the provided Grignard reagent to give the provided product

\[
\begin{align*}
\text{MgBr} & \quad 1. \text{ ???} \quad 2. \text{ H}_3\text{O}^+ \\
\end{align*}
\]
QUESTION 4
Grignardsc

Give the Grignard reagent you would use to complete the following reaction:

1. H
2. H₃O⁺

new C-C bonds are indicated in **BOLD**
QUESTION 5
Grignards

Give the Grignard reagent you would use to complete the following reaction:

\[
\begin{align*}
1. & \quad \text{O} \\
\text{??} & \quad \text{OH} \\
2. & \quad \text{H}_3\text{O}^+ \\
\end{align*}
\]

\[
\text{new C-C bonds are indicated in \textbf{BOLD}}
\]

- **A**
  \[
  \text{MgBr} \quad \text{MgBr} \\
  \]

- **B**
  \[
  \text{MgBr} \quad \text{MgBr} \\
  \]

- **C**
  \[
  \text{MgBr} \quad \text{MgBr} \\
  \]

- **D**
  \[
  \text{MgBr} \quad \text{MgBr} \\
  \]
How many of the carbon–carbon bonds in the following structure could have been made in a Grignard reaction with either a carbonyl compound (C=O) or an epoxide?

A 2 bonds
B 3 bonds
C 4 bonds
D 5 bonds

Can make these four bonds in a Grignard reaction:
- 1. MeMgBr
- 2. H$_3$O$^+$
- 1. EtMgBr
- 2. H$_3$O$^+$
- 1. PrMgBr
- 2. H$_3$O$^+$
- 1. EtMgBr
- 2. H$_3$O$^+$

Can't make this C-C bond in a Grignard reaction.
QUESTION 7
MC29c

Give the product of the following reaction sequence with the starting material shown, (hint, be careful with step #5, remember that Grignards are strong Bronsted bases!)

1. LiAlH₄
2. H₃O⁺
3. PBr₃
4. Mg·THF
5. H₃O⁺
**QUESTION 8**  
MC29b

Give the product of the following reaction sequence with the starting material shown (hint, be careful at step #3, remember that a Grignard reagent will also be a strong Bronsted base!)

1. Excess LiAlH₄  
2. H₂O⁺  
3. Excess MeMgBr  
4. H₂O⁺  
5. Na₂Cr₂O₇/H₂SO₄/H₂O

Addition

Elimination

conventional hydrolysis of the O-Mg bond

the Grignard simply deprotonates the alcohol here, the oxygen bonds to the Mg as usual (arrow-pushing not shown)