1. (10 points) Using any monosubstituted benzene that contributes six carbons to the final product, and any other piece that contribute three or fewer carbons to the final product, outline a synthesis of A.

```
O
/ 
|  \  
/    
|  OCH3

A
```

2. (10 points) Draw the structure of C, and the mechanism for its formation from B.

```
B
O
\   \CO2Et
/   /   
H  H

C

C14H22O3  IR: 2871, 1736, 1671, 1638 cm⁻¹

13C NMR:
188.0, s
164.7, s
149.8, d
135.9, s
61.8, t
43.2, t
32.1, s
28.4, q (3)
27.0, d
23.4, t
22.8, t
14.0, q

1H NMR:
6.97, t, J = 4.6 Hz, 1H
4.31, q, J = 7.1 Hz, 2H
2.4, m, 2H
2.1, m, 2H
1.5, m, 3H
1.34, t, J = 7.1 Hz, 3H
0.87, s, 9H
```

3. (10 points) Outline a mechanism for the transformation of D to E.

```
D

E

bb | bf
```