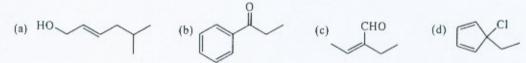
1. Give IUPAC names for the following compounds. (12%)



Assign an R or S configuration to the chiral center in each enantiomer. (8%)



 Draw a structural formula for the cycloalkene with the molecular formula C₆H₁₀ that reacts with Cl₂ to give each compound. (8%)

(a)
$$CI$$
 (b) CI_{M_1} (c) CI_{M_2} (d) CI_{CH_2} (d) CI_{CH_2} (e) CI_{CH_2} (f) C

- 4. Calculate the index of hydrogen deficiency of these compounds. (12%)
 - (a) Aspirin, C₉H₈O₄
- (b) Ascorbic acid (Vitamin C), C₆H₈O₆
- (d) Urea, CH₄N₂O (e) Cholesterol, C₂₇H₄₆O

(f) Dopamine, C₈H₁₁NO₂

(c) Pyridine, C5H5N

- 5. Draw a structural formula for the keto form of each enol. (8%)

Show reagents to convert bromocyclopentane to each of the following compounds. (20%)

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試題

- Draw five contributing structures for benzyl cation, and show, using curved arrows, how the first contributing structure for each cation is converted to the second and so forth. (10%)
 - 8. Propose a mechanism for the formation of these products in the solvolysis of this bromoalkane. (10%)

9. Show the product of the following reactions. (12%)

(a)
$$CH = CH_2 + CH_2I_2$$
 $Zn (Cu)$ diethyl ether

$$C \equiv CH + H_2O \xrightarrow{H_2SO_4} H_gSO_4$$

(d)
$$\bigcirc O \qquad \frac{1. \text{ LiAlH}_4}{2. \text{ H}_2 O}$$

$$0 \quad O_2N \longrightarrow OH \quad \frac{Br_2}{FeCl_1}$$