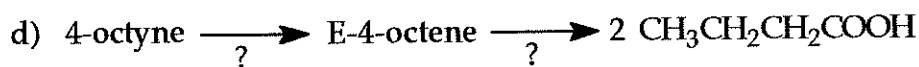
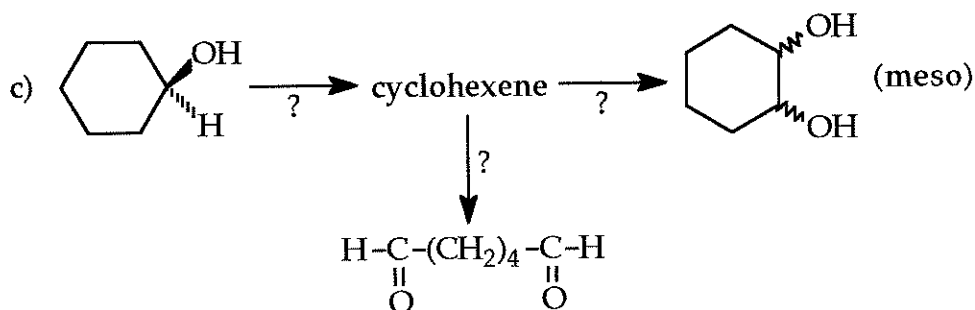
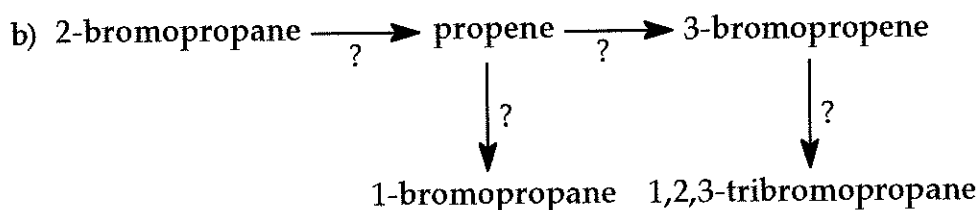
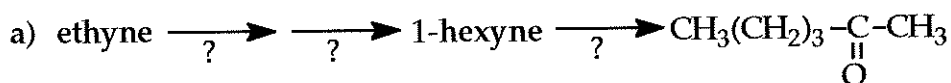
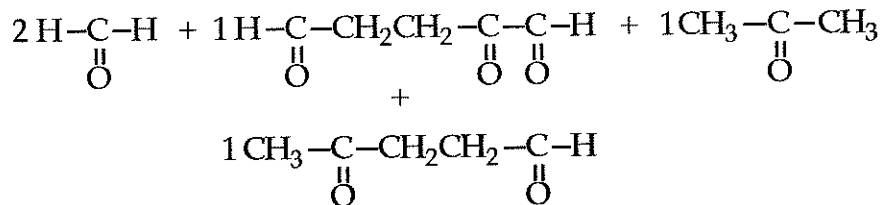


(36) 1. Supply the missing reagents in the following transformations:



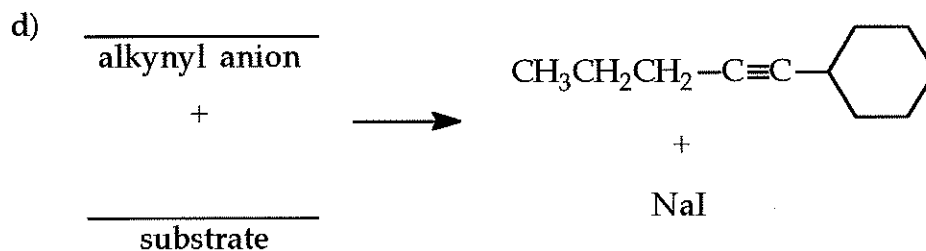
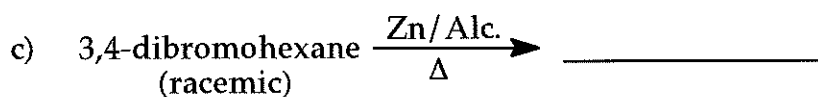
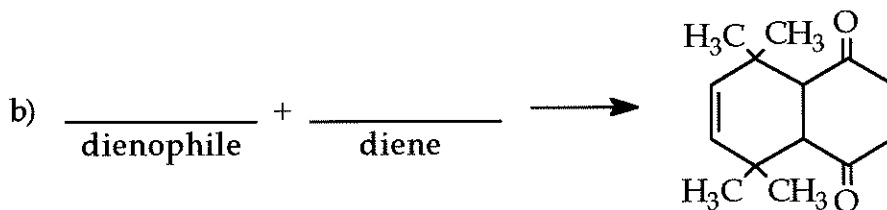
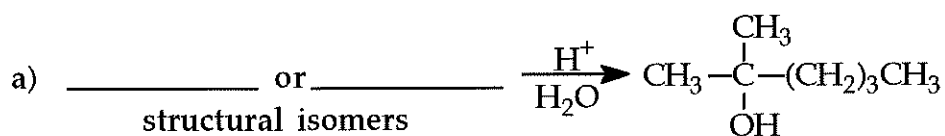
(6) 2. The alarm pheromone of the green peach aphid has the formula $\text{C}_{15}\text{H}_{24}$. Upon catalytic hydrogenation, $\text{C}_{15}\text{H}_{24}$ is converted to 2,6,10-trimethyldodecane. Ozonolysis with reductive workup of $\text{C}_{15}\text{H}_{24}$ produces the cleavage products shown below:



Propose a structure for $\text{C}_{15}\text{H}_{24}$ based on the data provided. Ignore the possibility of E/Z isomerism.

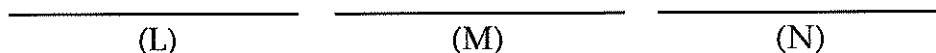
_____ $\text{C}_{15}\text{H}_{24}$

(22) 3. Supply the missing reactants/products in the following reactions:

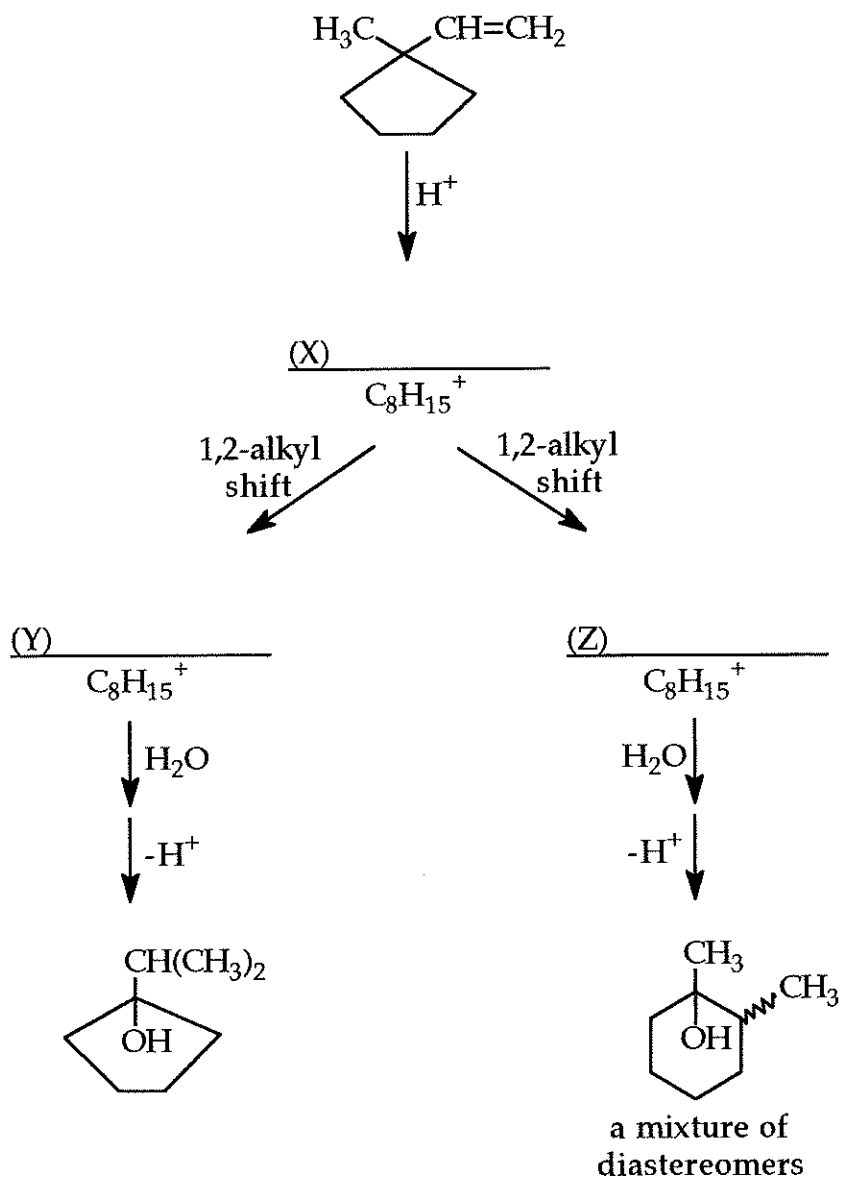


(12) 4. Achiral compounds (L) and (M) have the molecular formula C_7H_{14} and are E/Z diastereomers with respect to one another. Catalytic hydrogenation of either (L) or (M) produces a racemic mixture of compound (N) of molecular formula C_7H_{16} .
Hint: Hydrogenation of the (L)/(M) diastereomers leads to the creation of a stereogenic center in compound (N).

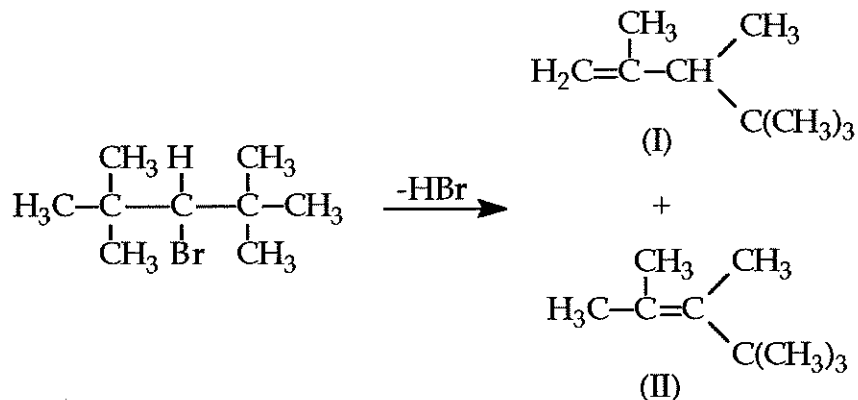
Propose plausible structures for (L), (M), and (N). From the data provided, it will not be possible to differentiate between (L) and (M).



- (12) 5. Draw the structures of the carbocationic intermediates in the following mechanistic pathway:



(12) 6. Consider the dehydrohalogenation reaction shown below:



For the one elimination pathway by which the above reaction proceeds (E-1? or E-2?), will it be true or false that:

- (I) represents the major alkene product
- alkene formation occurs via a carbocationic intermediate
- the rate of elimination is directly proportional to the concentration of alkyl bromide reactant
- the rate of elimination will be enhanced if bromine is replaced by iodine