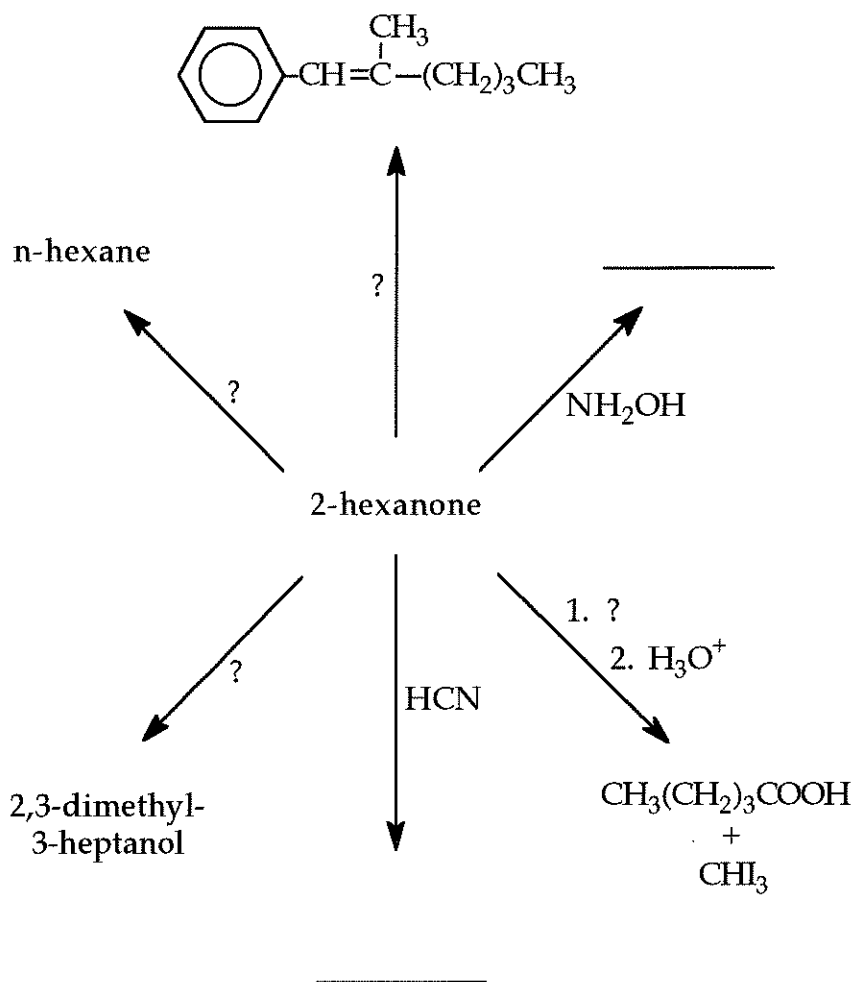


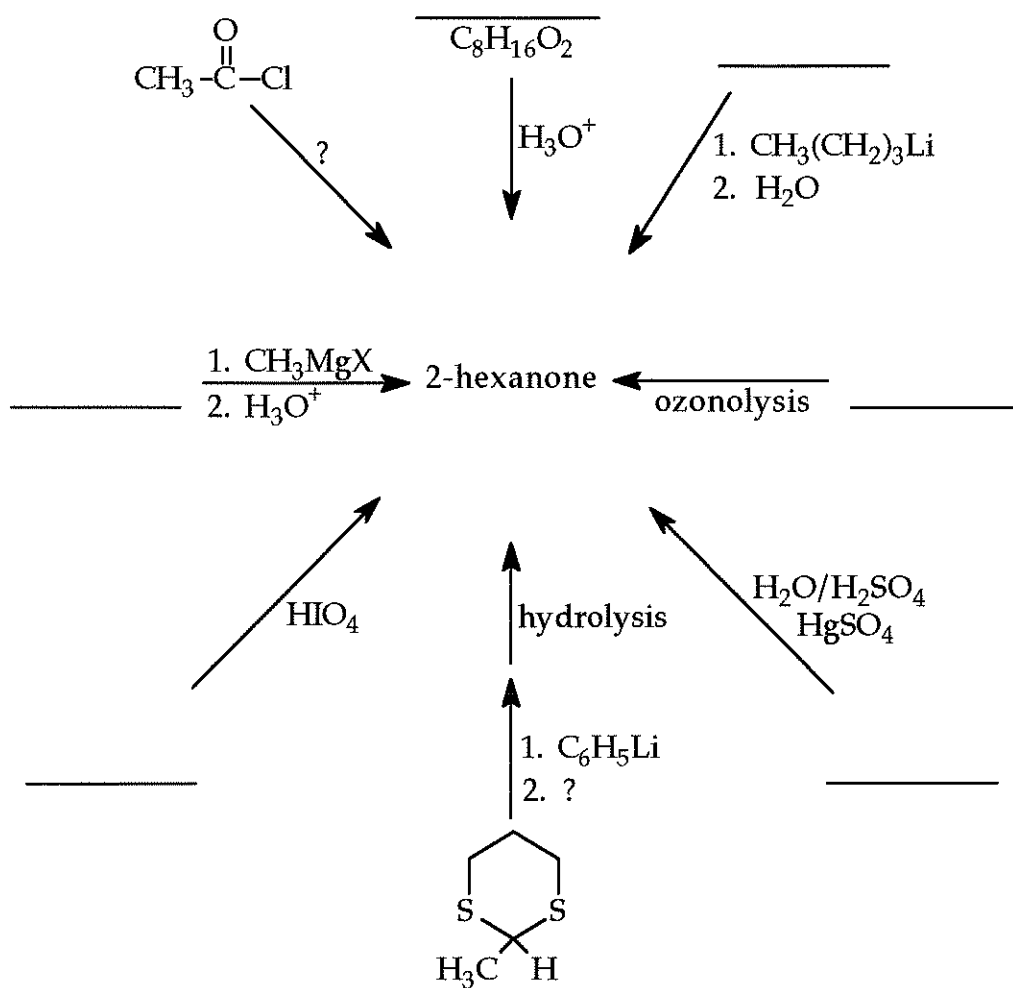
- (18) 1. Supply the correct missing products/reagents in the scheme shown below illustrating some reactions of 2-hexanone.



- (6) 2. The organic compound responsible for the disagreeable odor of individuals who eschew frequent baths/showers has the formula $C_4H_6O_2$. Based on the data presented below, deduce the structure of $C_4H_6O_2$.

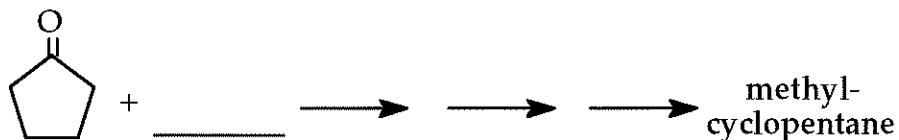
Chemical data	Spectral data	Structure of $C_4H_6O_2$
(+) 2,4-DNPH	1 pmr signal	_____ ?
(-) Tollens	2 cmr signals	
(+) Iodoform		
(+) Periodic acid		

- (24) 3. Supply the correct missing reactants/reagents in the scheme shown below illustrating some syntheses of 2-hexanone.

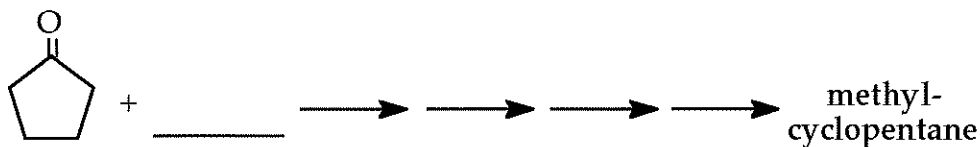


(30) 4. Show how methylcyclopentane can be prepared:

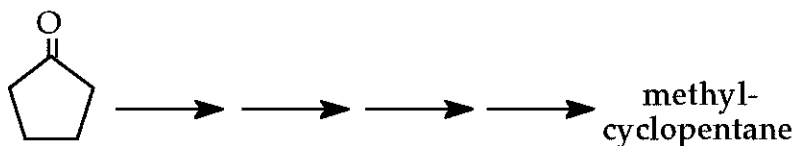
a) from cyclopentanone via a Grignard synthesis.



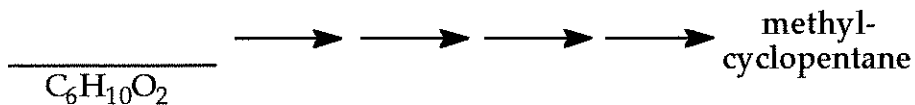
b) from cyclopentanone via a crossed Aldol condensation.



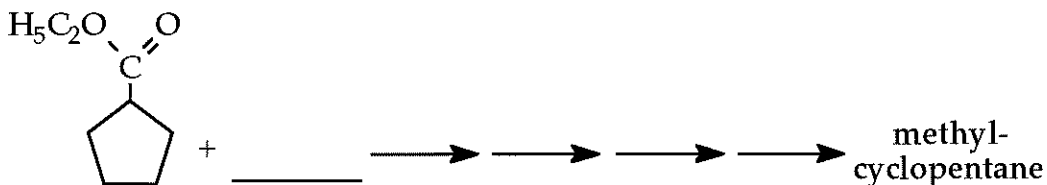
c) from cyclopentanone via an Enamine synthesis.



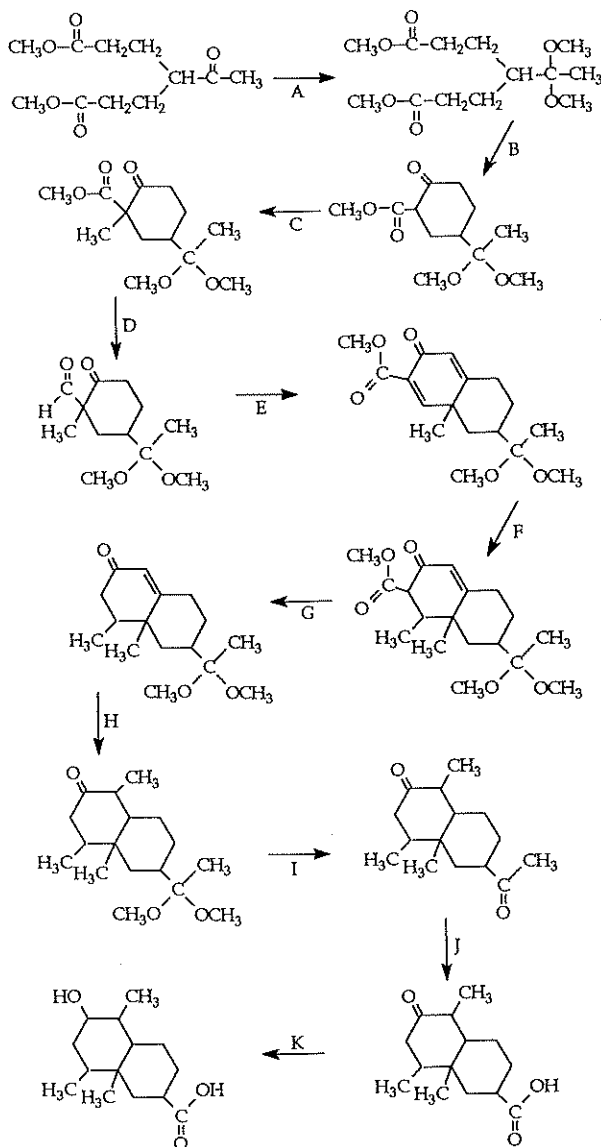
d) from $C_6H_{10}O_2$ via an Aldol (self) condensation.



e) from ethyl cyclopentanecarboxylate (an ester) via a crossed Claisen condensation.



- (22) 5. Based on the reaction scheme shown below, match the steps in Column A with the appropriate descriptor in Column B:



Column A

- Step A
- Step B
- Step C
- Step D
- Step E
- Step F
- Step G
- Step H
- Step I
- Step J
- Step K

Column B

- ___ Haloform reaction
- ___ "Robinson-like annulation"
- ___ Acidic hydrolysis
- ___ Selective reduction
- ___ Li/NH₃; CH₃X
- ___ Dieckmann condensation
- ___ DIBAH
- ___ (CH₃)₂CuLi
- ___ Ketal formation
- ___ α-carbanion alkylation
- ___ OH⁻ / Δ ; decarboxylation