

Code No.: 8956

FACULTY OF SCIENCE  
M.Sc. III Semester Examination, May/June 2012  
ORGANIC CHEMISTRY  
Paper III (303)  
(Modern organic synthesis)

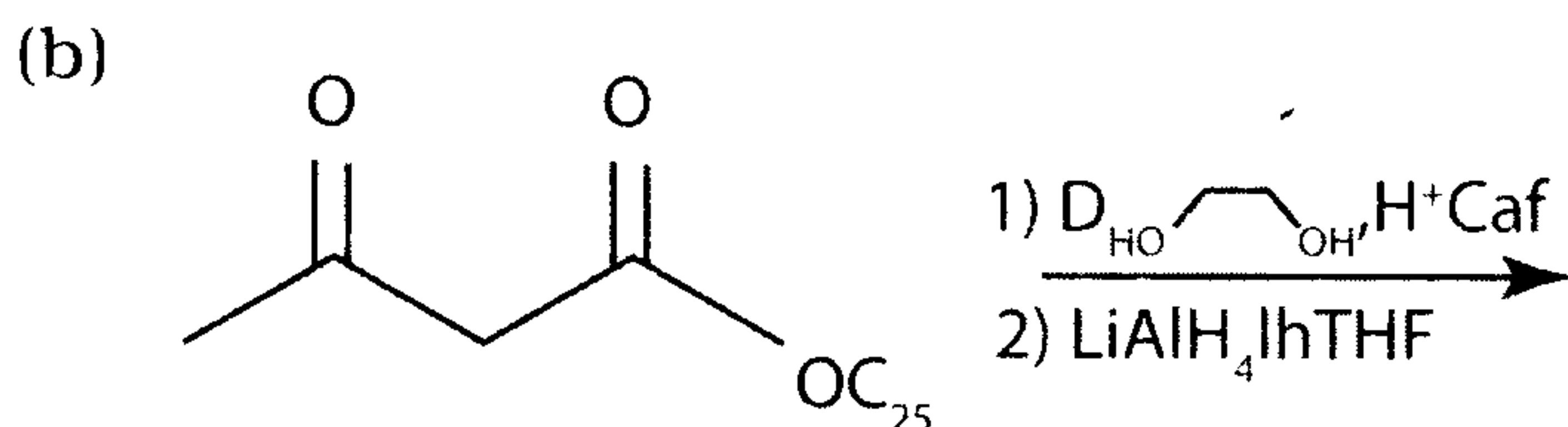
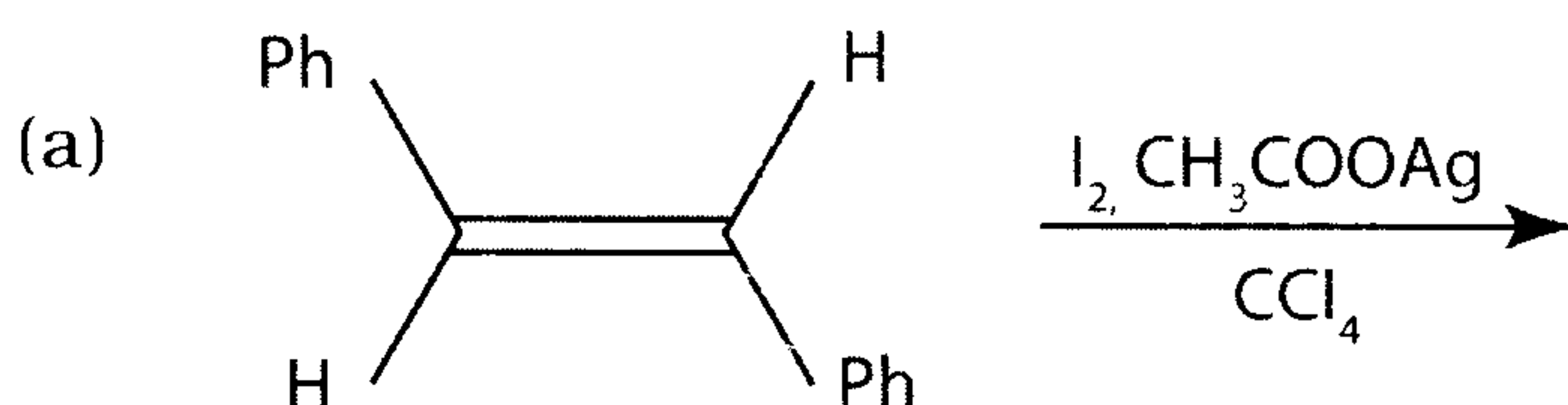
Time : 3 Hours]

[Max. Marks : 80

Answer all questions.

Section A — (Marks : 4 × 8 = 32)

1. Provide the product and suggest a mechanism to its formation of the following reactions.



2. (a) What is umpolung? Explain with suitable example.  
(b) Suggest the products when methylithium is added to a ketene and an isocyanate.
3. (a) Illustrate the role of DABCO in Baylis-Hillman reaction.  
(b) Following shapiro mechanism convert cyclohexanone to cyclohexene.
4. (a) Explain the Nature's chiral pool.  
(b) Report the synthesis of a Merrifield resin.

Section B — (Marks : 4 × 12 = 48)

5. (a) Write a note on the Oxalyl Chloride initiated oxidation of alcohol.  
(b) How 1,2,- dicarbonyls are prepared using  $\text{SeO}_2$ .

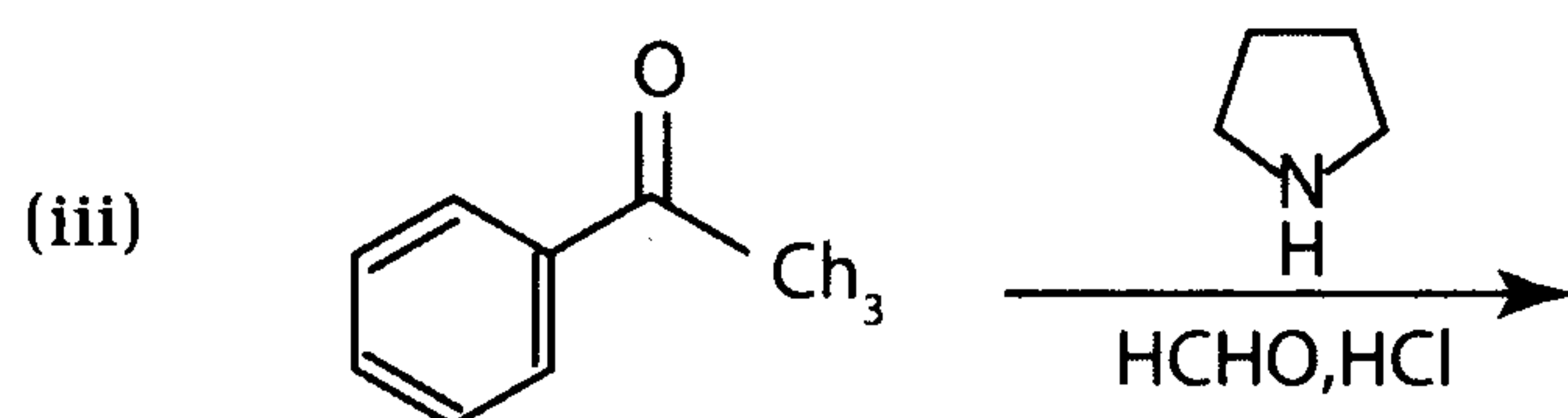
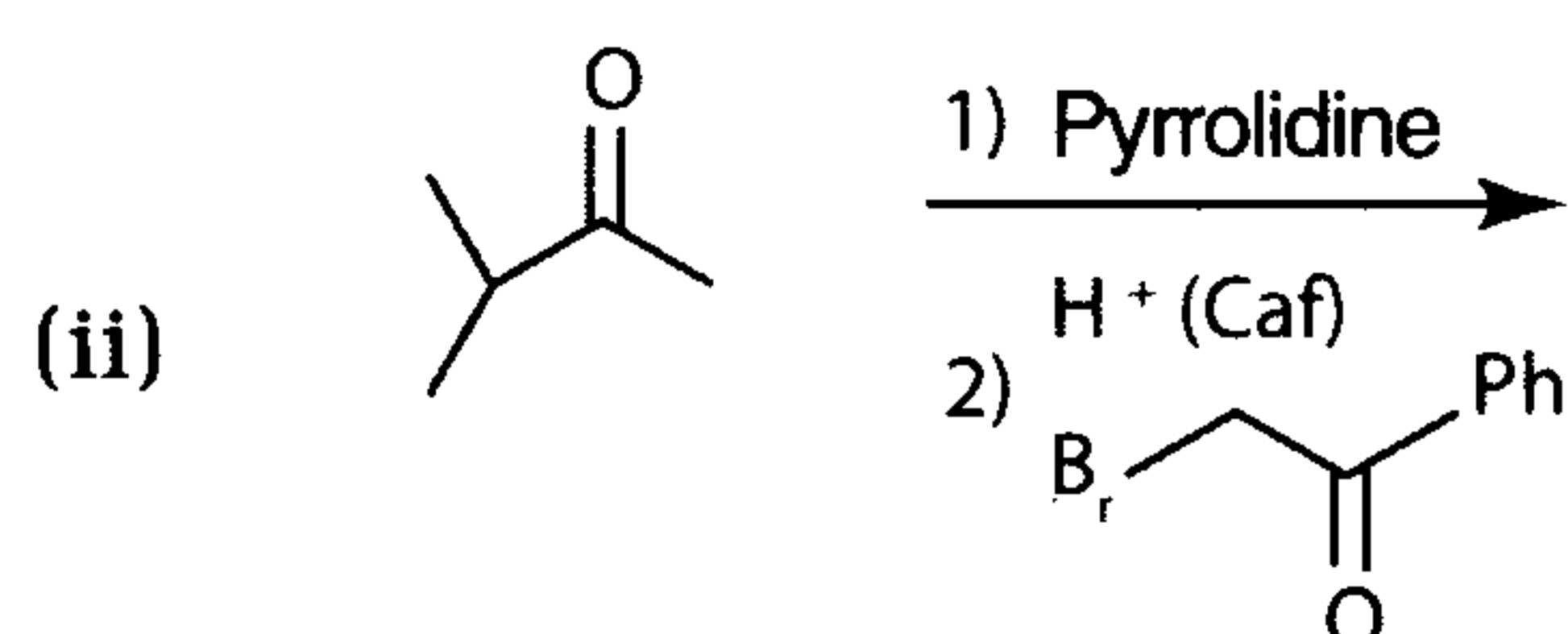
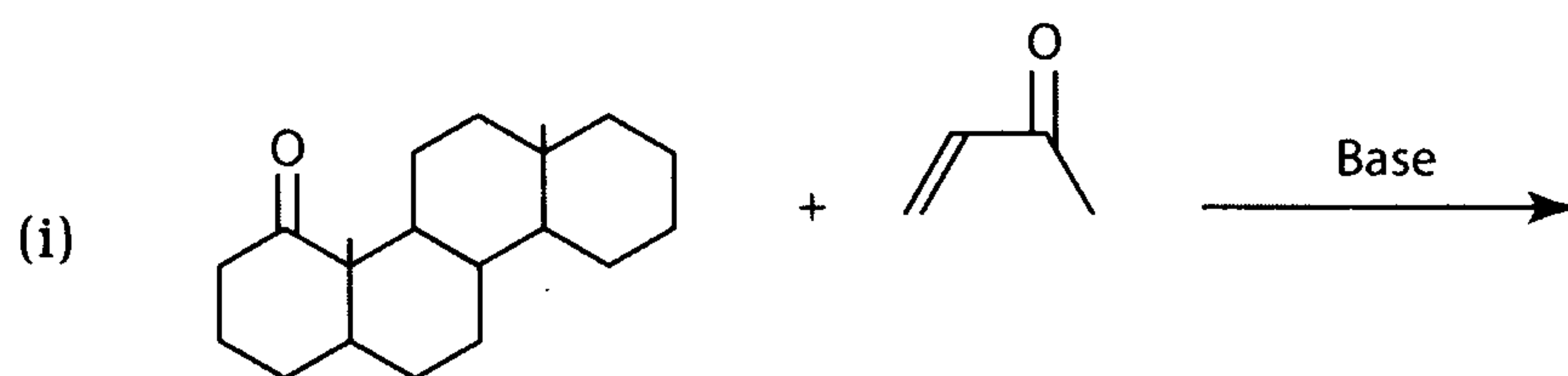
Or

[P.T.O.]

- (c) Explain the stereospecific reduction of an alkene by Wilkinson's catalyst.
- (d) Name the compound obtained when benzyl alcohol is treated with phosgene and explain its use in the organic synthesis.
6. (a)  $\alpha$ ,  $\beta$  unsaturated ketones on reaction with organo.lithium compounds provide a direct addition product while Gilman reagents yield a conjugate addition product. Explain.
- (b) Provide any two examples of C-C bond formation employing organoboranes.

Or

- (c) Give the product and the mechanism of their formation of the following reactions.



7. (a) Explain the formation of diastereoisomers in the Peterson's definition.
- (b) Give the structure of first generation and second generation Grubb's catalysts.

Or

- (c) Sketch the mechanism of McMurry dial condensation.
  - (d) Provide the mechanism of aza witting reaction.
8. (a) Define glycosyl donor and glycosyl acceptor with suitable examples.
- (b) List the favoured and disfavoured cyclizations obeying the Baldwin's rules.

Or

- (c) Provide the structure and names of any four phase transfer catalysis. Explain a nucleophilic substitution reaction employing a phase transfer catalyst.
  - (d) How is the absolute configuration of a molecule determined by Felkin-Ann's model.
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