

This question paper contains 7 printed pages]

**ST—297—2022**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (Second Year) (Fourth Semester) EXAMINATION**

**MAY/JUNE, 2022**

**(CBCS Pattern)**

**ORGANIC CHEMISTRY**

**Paper-XIX (CH-543/2)**

**(Organic Synthesis-II)**

**(Monday, 4-7-2022)**

**Time : 2.00 p.m. to 5.45 p.m.**

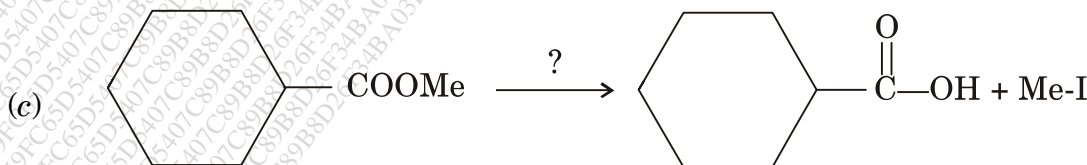
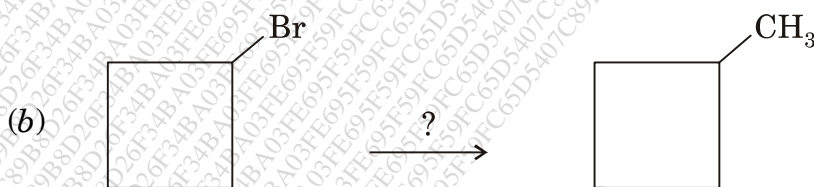
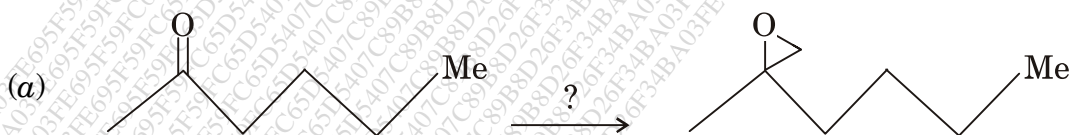
*Time— 3.45 Hours*

*Maximum Marks—75*

*N.B. :— (i) All questions are compulsory.*

*(ii) Figures to the right indicate full marks.*

1. Suggest the suitable reagents for the following conversion (any *three*) : 15

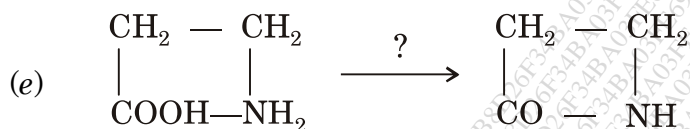
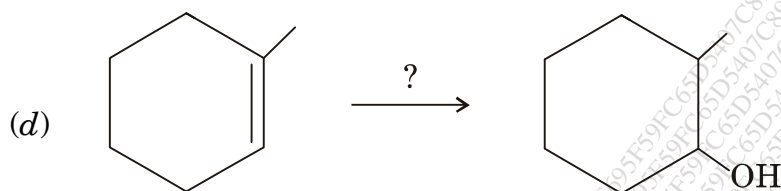


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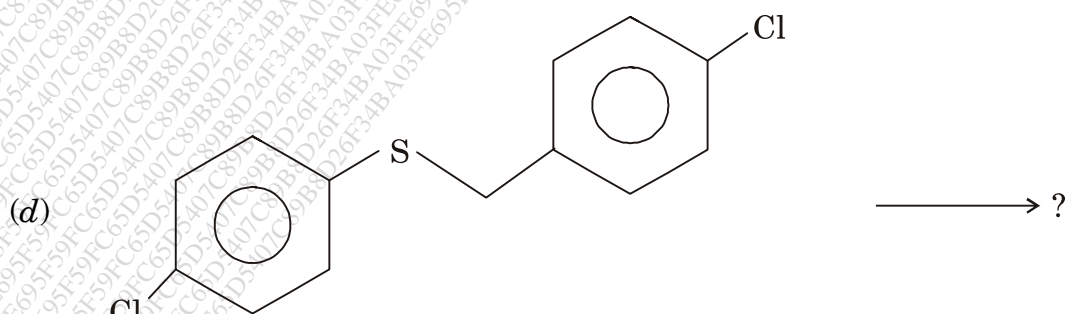
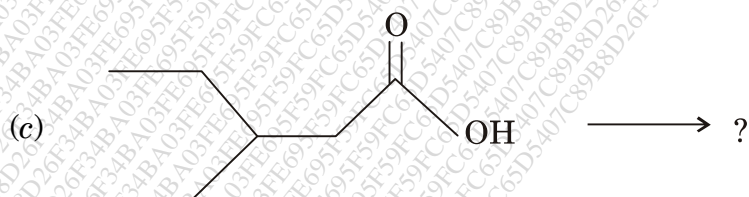
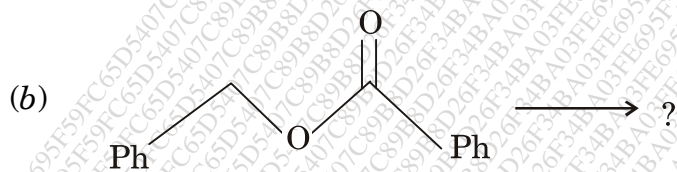
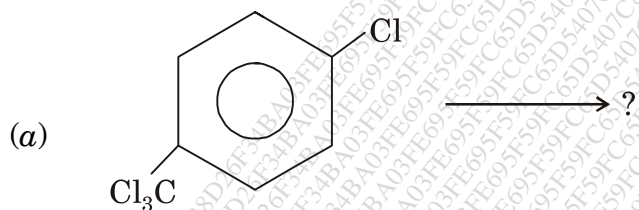
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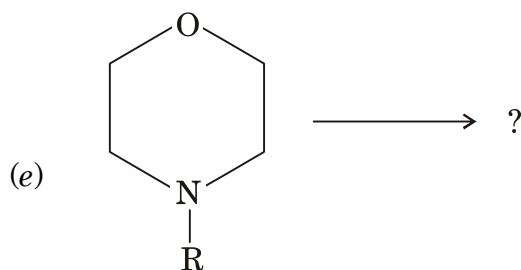
2. Using Retrosynthesis suggest suitable method for the synthesis of the following (any three) : 15



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3. Solve the following :

(a) Explain with suitable example :

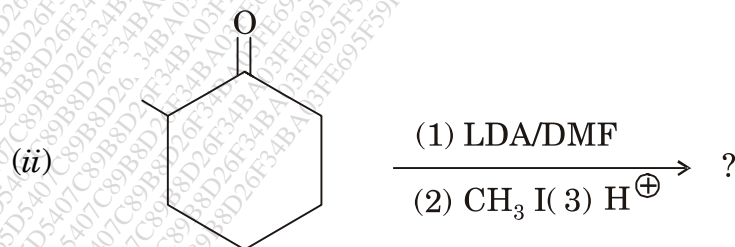
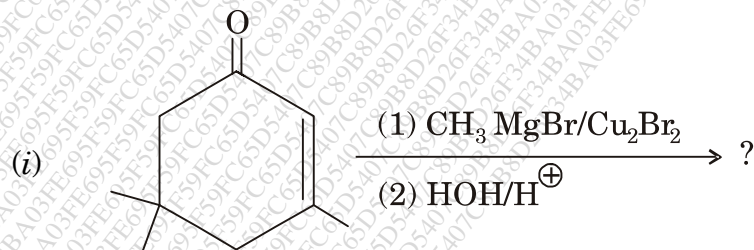
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(i) Regioselectivity

(ii) Michael addition.

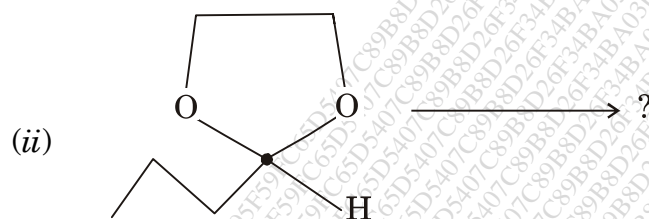
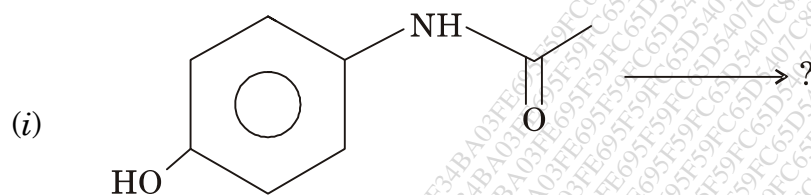
Or

Predict the product with mechanism :



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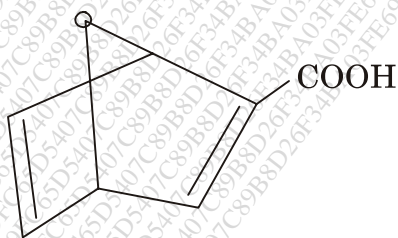
- (b) Using retrosynthesis suggest suitable method for the synthesis of the following : 7



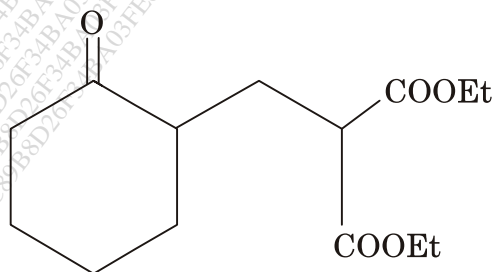
Or

Solve the following :

- (i) Explain the synthesis of the following target molecule using Retro Diels-Alder reaction :

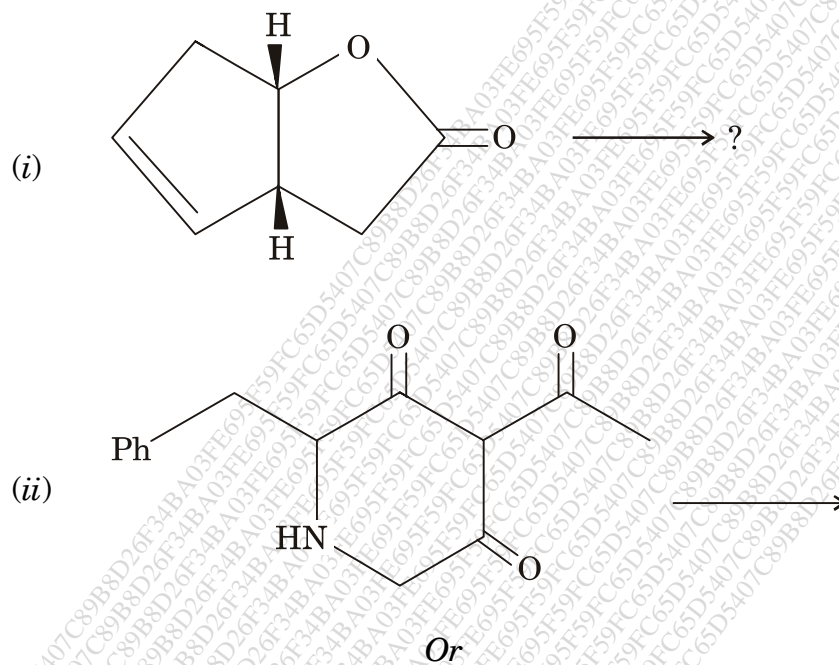


- (ii) Explain the synthesis of the following target molecule (T.M.) using Michael addition reaction :

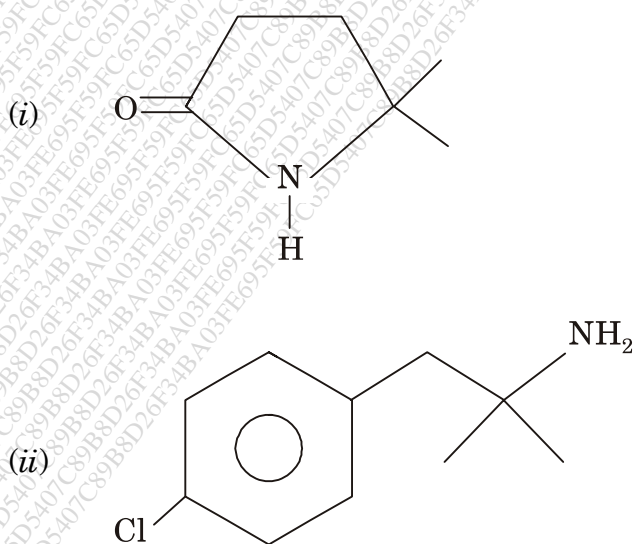


4. Solve the following :

(A) How will you synthesize the following compounds using ketenes ? 8



How will you synthesize the following target molecules using aliphatic nitro compound :



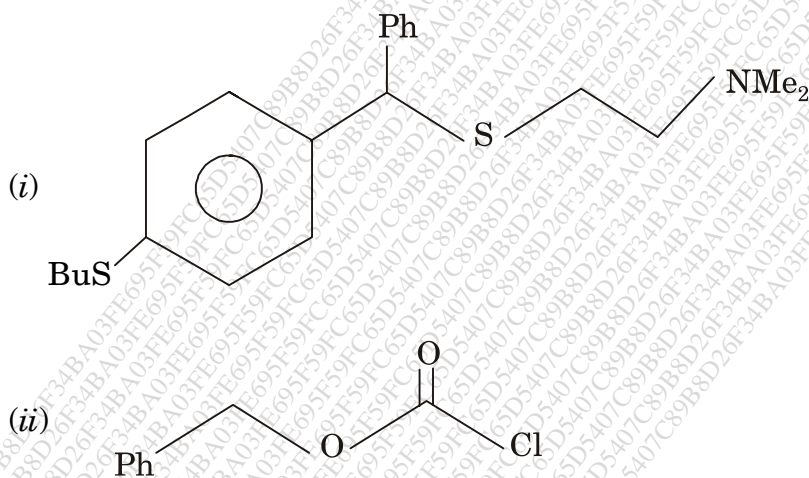
P.T.O.

(B) Describe the synthesis of camphor.

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Or

Using the concept of chemoselectivity how will you synthesize the following compounds :



5. (A) Select the *correct* answer from the following alternatives :

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(i) The more reactive acid derivative is :

- (a)  $R-\text{CONH}_2$  (b)  $\text{RCOCl}$   
 (c)  $R-\text{COOR}$  (d)  $(R-\text{CO})_2\text{O}$

(ii) Enamines are prepared for the protection of :

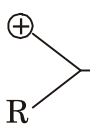
- (a)  $\text{>CH}_2$  (b)  $\text{>C=O}$   
 (c)  $-\text{NH}_2$  (d)  $\text{>C=C<}$

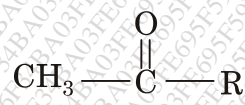
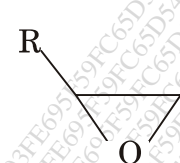
(iii) Which of the following is phosphorus xylene ?

- (a)  $\text{>S}=\text{CH}_2$  (b)  $\text{>S}^{\oplus}-\text{CH}_2^{\ominus}$   
 (c)  $\text{PH}_3\text{P}^{\oplus}-\text{CH}_2^{\ominus}$  (d)  $\text{PH}_3\text{P}=\text{CH}_2$

(iv) Dithanes are used to protect :

- (a) Carboxyl group      (b) Amino group  
 (c) Carbozayl group    (d) Hydroxy gorup

(v) The synthon , its synthetic equivalent is :

- (a)  $\text{CH}_3\text{—O—R}$       (b)   
 (c)       (d) None of these

(B) Write short notes on any *two* of the following :

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- (i) Reversal of Polarity  
 (ii) Grignard reagent  
 (iii) Synthesis of six membered heterocyclic ring.