

Seat No. : \_\_\_\_\_

**AC-121**

**April-2016**

**M.Sc., Sem.-IV**

**508 : Chemistry (Organic)**  
**(Advanced Organic Synthesis Chemistry)**

**Time : 3 Hours]**

**[Max. Marks : 70**

- Instructions :** (1) All questions carry equal marks.  
(2) Figures to the right indicate full marks of that question.

1. (A) Answer the followings : 7

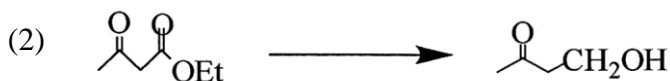
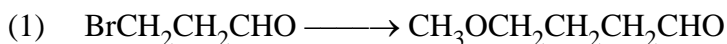
- (1) What is the use of protection and deprotection in organic synthesis ?  
Discuss any three methods for protection and deprotection of  $-\text{COOH}$  group.
- (2) Discuss the principle of protecting alcohols. Give methods for protecting 1,2- and 1,3-diols.

**OR**

(A) Answer the followings : 7

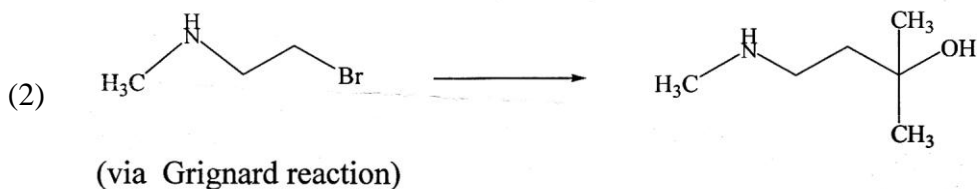
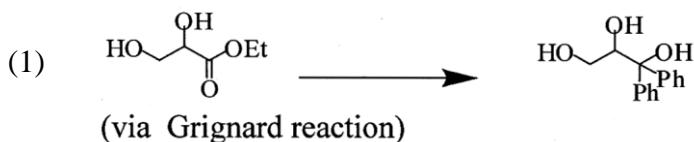
- (1) Discuss protection and deprotection of aldehyde and ketone groups.  
(2) Discuss protection and deprotection of  $1^\circ$ ,  $2^\circ$ ,  $3^\circ$  amines.

(B) Complete the following conversions with suitable protecting group : 7

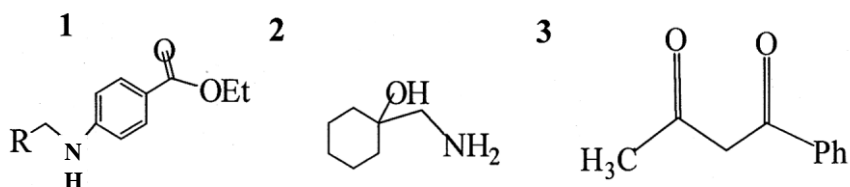


**OR**

(B) Complete the following conversions with suitable protecting group : 7

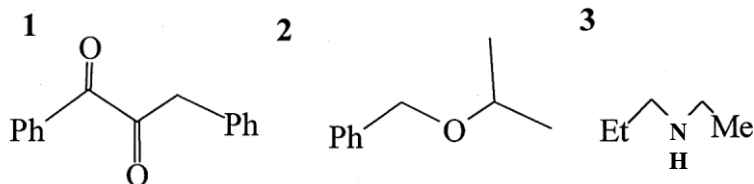


2. (A) Outline retro-synthesis of any **two** of the followings : 7



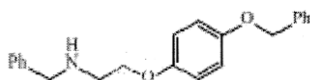
OR

(A) Outline the retro-synthesis of any **two** of the followings : 7

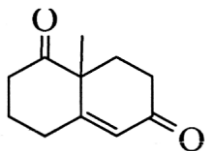


(B) Answer the followings : 7

(1) What is chemoselective reaction ? Outline the retro-synthesis of the following :

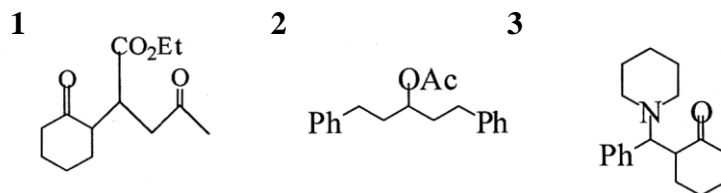


(2) Outline the retro-synthesis of the following



OR

(B) Outline the retro-synthesis of any **two** of the following 7



3. (A) Answer the followings : 7

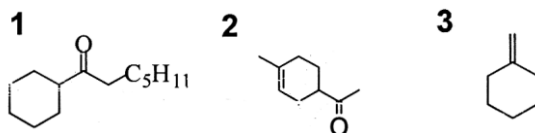
(1) What is reversal of polarity ? Discuss the use of aliphatic nitro compounds in retro synthesis.

(2) Discuss regioselectivity in Michael Reaction.

OR

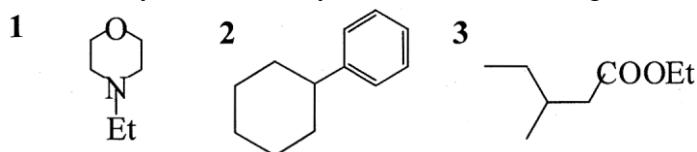
- (A) Answer the followings : 7
- (1) Discuss regioselectivity in Wittig Reaction.
  - (2) Discuss the use of 1,3-dithiane as unpolung reagent.

- (B) Outline the retro-synthesis of any **two** of the followings : 7

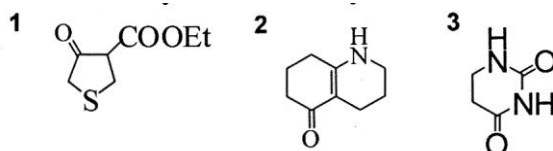


**OR**

- (B) Outline the retro-synthesis of any **two** of the followings : 7

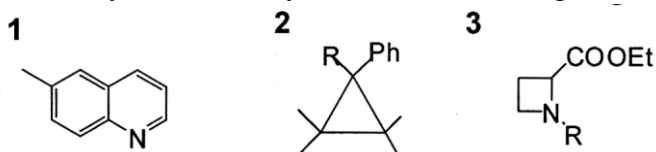


4. (A) Outline the retro-synthesis of any **two** of the followings : 7



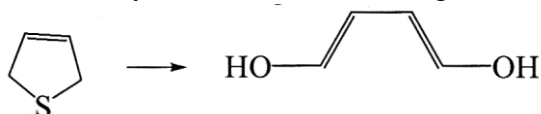
**OR**

- (A) Outline the retro-synthesis of any two of the followings 7



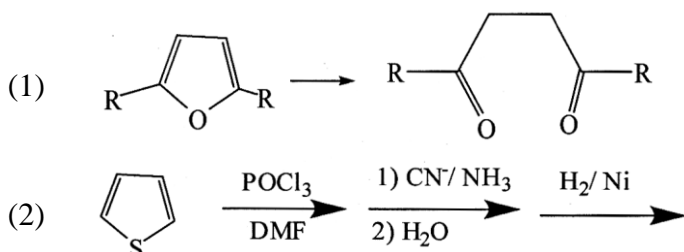
- (B) Answer the followings : 7

- (1) Show the synthetic power of heterocycles in organic synthesis by
  - (1) Destruction of aromaticity and
  - (2) Temporary formation of heterocyclic intermediate
- (2) Outline the retro-synthesis of the followings :



**OR**

- (B) Complete the following conversions : 7



5. Short questions.

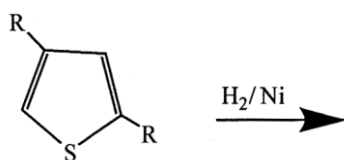
14

**Define**

1. Protecting group
2. TM
3. synthon
4. FGI
5. Retro-synthesis
6. Illogical electrophile with one example

**Give structure and use of**

7. Trityl group
8. CBZ
9. 1, 3-dithialane
10. Fmoc and THP
11. Why simple ethers like methyl and ethyl ethers are not used to protect alcohols ?
12. Give two equivalent synthons for R<sup>-</sup>
13. **Complete the reaction**



14. Complete the following conversion with suitable reagent for protecting group :

