5.

## SARDAR PATEL UNIVERSITY

## M.Sc. Semester-III (Organic Chemistry) Examination Wednesday, $20^{\rm th}$ November 2019

Organic Synthesis – A Disconnection approach: PS03CORC02

|  | Time: | 02:00 P. | M. to | 05:00 | P.M |
|--|-------|----------|-------|-------|-----|
|--|-------|----------|-------|-------|-----|

Marks: [70]

Note: Right hand figures indicate marks

| (a) Disconnection (b) FGI (c) synthetic equivalent (d) synthon in a disconnection, the reconnection concept is possible in  (a) 1,3-dicarbonyl compounds (b) 1,4-dicarbonyl compounds (c) 1,5-dicarbonyl compounds (d) 1,6-dicarbonyl compounds Which of the following reaction is used for synthesis of olefins?  (a) Robinson reaction (b) Wittig reaction  (c) Mannich reaction (d) Aldol condensation Which of the following reagent used for syn-hydroxylation of olefin?  (a) OsO <sub>4</sub> (b) O <sub>3</sub> (c) SeO <sub>2</sub> (d) CrO <sub>3</sub>  | The process in which one group is written in place of another group is known as |
|--|---|
| (a) 1,3-dicarbonyl compounds (b) 1,4-dicarbonyl compounds (c) 1,5-dicarbonyl compounds (d) 1,6-dicarbonyl compounds Which of the following reaction is used for synthesis of olefins?  (a) Robinson reaction (b) Wittig reaction (c) Mannich reaction (d) Aldol condensation Which of the following reagent used for syn-hydroxylation of olefin?  (a) OsO <sub>4</sub> (b) O <sub>3</sub> (c) SeO <sub>2</sub> (d) CrO <sub>3</sub> (a) OsO <sub>4</sub> (b) O <sub>3</sub> (c) SeO <sub>2</sub> (d) CrO <sub>3</sub> (b) OsO <sub>4</sub> (c) Oso <sub>7</sub> (d) CrO <sub>3</sub> (c) Feb (d)  |   |
| (c) 1,5-dicarbonyl compounds Which of the following reaction is used for synthesis of olefins?  (a) Robinson reaction (b) Wittig reaction (c) Mannich reaction (d) Aldol condensation Which of the following reagent used for syn-hydroxylation of olefin? (a) OsO <sub>4</sub> (b) O <sub>3</sub> (c) SeO <sub>2</sub> (d) CrO <sub>3</sub> Me  Significant  The product formed for the above reaction is  (a) H <sub>3</sub> C (b) Ph  CH <sub>3</sub> (c) Ph  CH <sub>3</sub> (d) H <sub>3</sub> C (e) Ph  The reagent used for allylic bromination is (a) Br <sub>2</sub> /AcOH (b) aq. Br <sub>2</sub> (c) NBS (d) NaOBr  The umpolung approach will make the carbonyl carbon of aldehyde (a) nucleophilic (b) electrophilic (c) neutral (d) Both a & b  The thalic anhydride is used for the protection of (a) ketone (b) aldehyde (c) amine (d) phenol  Answer the following (Any Seven).  Define the terms (a) Reterosynthesis (b) Synthon  To the disconnection and plan the synthesis of following molecule.  Ph  Vith suitable example show the use of Darzens reaction in epoxide  | In a disconnection, the reconnection concept is possible in                     |
| Which of the following reaction is used for synthesis of olefins?  (a) Robinson reaction (b) Wittig reaction (c) Mannich reaction (d) Aldol condensation  Which of the following reagent used for syn-hydroxylation of olefin? (a) OsO <sub>4</sub> (b) O <sub>3</sub> (c) SeO <sub>2</sub> (d) CrO <sub>3</sub> The product formed for the above reaction is  (a) H <sub>3</sub> C (b) Ph (cH <sub>3</sub> (c) Ph (d) H <sub>3</sub> C (d) Ph (d) Ph (e) Ph (e) Ph (f) Ph (f) Ph (f) Ph (f) Ph (g) Ph  | (a) 1,3-dicarbonyl compounds (b) 1,4-dicarbonyl compounds                       |
| (a) Robinson reaction (b) Wittig reaction (c) Mannich reaction (d) Aldol condensation  Which of the following reagent used for syn-hydroxylation of olefin?  (a) OsO <sub>4</sub> (b) O <sub>3</sub> (c) SeO <sub>2</sub> (d) CrO <sub>3</sub> Me  CH <sub>3</sub> The product formed for the above reaction is  (a) H <sub>3</sub> C  Ph  (b) Ph  CH <sub>3</sub> (c) Ph  (d) H <sub>3</sub> C  Ph  The reagent used for allylic bromination is  (a) Br <sub>2</sub> /AcOH (b) aq. Br <sub>2</sub> (c) NBS (d) NaOBr  The umpolung approach will make the carbonyl carbon of aldehyde  (a) nucleophilic (b) electrophilic (c) neutral (d) Both a & b  ththalic anhydride is used for the protection of  (a) ketone (b) aldchyde (c) amine (d) phenol  conswer the following (Any Seven).  Define the terms (a) Reterosynthesis (b) Synthon  On the disconnection and plan the synthesis of following molecule.  With suitable example show the use of Darzens reaction in epoxid  | (c) 1,5-dicarbonyl compounds (d) 1,6-dicarbonyl compounds                       |
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| Which of the following reagent used for syn-hydroxylation of olefin?  (a) OsO <sub>4</sub> (b) O <sub>3</sub> (c) SeO <sub>2</sub> (d) CrO <sub>3</sub> Me  CH <sub>3</sub> ?  The product formed for the above reaction is  (a) H <sub>3</sub> C  Ph  CH <sub>3</sub> (c) Ph  CH <sub>3</sub> (c) Ph  CH <sub>3</sub> (c) Ph  CH <sub>3</sub> (d) Ph  CH <sub>3</sub> Ph  CH <sub>4</sub> (e) Ph  CH <sub>5</sub> (f) Ph  CH <sub>6</sub> (h) Ph  CH <sub>7</sub> (h) Ph  CH <sub>8</sub> (h) Ph  CH <sub>8</sub> (h) Ph  CH <sub>9</sub> (h) Ph  C | (a) Robinson reaction (b) Wittig reaction                                       |
| (a) OsO <sub>4</sub> (b) O <sub>3</sub> (c) SeO <sub>2</sub> (d) CrO <sub>3</sub> Me  Signature of the product formed for the above reaction is  (a) H <sub>3</sub> C  (b) Ph  CH <sub>3</sub> (c) Ph  (d) H <sub>3</sub> C  Ph  The reagent used for allylic bromination is  (a) Br <sub>2</sub> /AcOH (b) aq. Br <sub>2</sub> (c) NBS (d) NaOBr  The umpolung approach will make the carbonyl carbon of aldehyde  (a) nucleophilic (b) electrophilic (c) neutral (d) Both a & b  The thalic anhydride is used for the protection of  (a) ketone (b) aldehyde (c) amine (d) phenol  Conswer the following (Any Seven).  Define the terms (a) Reterosynthesis (b) Synthon  To the disconnection and plan the synthesis of following molecule.  Ph  Vith suitable example show the use of Darzens reaction in epoxid  | (c) Mannich reaction (d) Aldol condensation                                     |
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| The product formed for the above reaction is  (a) H <sub>3</sub> C   | Me<br>\$——  CH <sub>2</sub>   |
| The product formed for the above reaction is  (a) H <sub>3</sub> C   | Me ?  |
| (a) H <sub>3</sub> C (b) Ph CH <sub>3</sub> (c) Me (d) H <sub>3</sub> C (e) Ph Me (e) Ph Me (fine reagent used for allylic bromination is (fine reagent used for allylic bromination is (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl carbon of aldehyde (fine umpolung approach will make the carbonyl   | Pn CH <sub>3</sub>  |
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| (a) Br <sub>2</sub> /AcOH (b) aq. Br <sub>2</sub> (c) NBS (d) NaOBr The umpolung approach will make the carbonyl carbon of aldehyde  (a) nucleophilic (b) electrophilic (c) neutral (d) Both a & b Ththalic anhydride is used for the protection of  (a) ketone (b) aldehyde (c) amine (d) phenol  Answer the following (Any Seven).  Define the terms (a) Reterosynthesis (b) Synthon  To the disconnection and plan the synthesis of following molecule.  Ph  With suitable example show the use of Darzens reaction in epoxid   |   |
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| Ph<br>Vith suitable example show the use of Darzens reaction in epoxid   |   |
| •  |   |
| •  |   |
| •  | With suitable example show the use of Darzens reaction in enoxid                |
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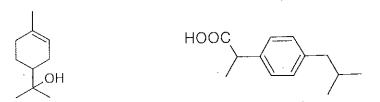
Give the preparation of valine using Strecker amino acid synthesis.

- 6. Write the dimerization products of unsubstituted and disubstituted ketenes in the absence of nucleophile.
- 7. Write down protection and deprotection of amines.
- 8. Explain FGA with suitable example.
- 9. Write down protection and deprotection of alcohols.
- Q-3 [A] Do the disconnection and plan the synthesis for the following molecules. [06]
  1. 2.



[B] Do the disconnection and plan the synthesis for the following molecules. [06]

1. 2.



OR

[B] Do the disconnection and plan the synthesis for the following molecules. [06]



Q-4 [A] Do the disconnection and plan the synthesis for the following molecules. [06]



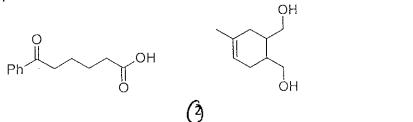
[B] Do the disconnection and plan the synthesis for the following molecules. [06]



OR

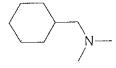
[B] Do the disconnection and plan the synthesis for the following molecules. [06]

1. 2.



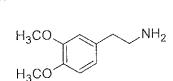
- Q-5 [A] Do the disconnection and plan the synthesis for the following molecules.
- [06]

[06]



- Ph\_NH
- [B] Do the disconnection and plan the synthesis for the following molecules.

  1. 2.



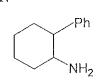


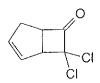
OR

[B] Do the disconnection and plan the synthesis for the following molecules.

1. 2.

[06]





Q-6 [A] Do the disconnection and plan the synthesis for the following molecules using [06] umpolung of carbonyl group reactivity.

Ph Ph

1.



[B] Give the synthesis of following intermediate used in the synthesis of [06] Coenzyme A.

OR

[B] 1. Explain the protection and deprotection of aldehydes and ketones.

[03] [03]

2. Give the synthesis of pyrrole derivative used in the synthesis of Mesoporphyrin-IX.





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