

[54]

SEAT No. _____

No. of Printed Pages : 4

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SARDAR PATEL UNIVERSITY

M.Sc. Semester-III (Organic Chemistry) Examination

Friday, 22nd March 2019

Disconnection Approach: PS03CORC22

Time: 02:00 p.m. to 05:00 p.m.

Note: Right hand figures indicate marks

Marks: [70]

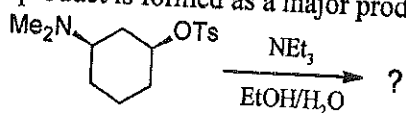
Q-1 Select the correct answer in the following.

[08]

1. Which of the following statement is incorrect for the Eschenmoser fragmentation?

- (a) it is useful synthetic method for making keto alkenes
 (b) it is useful synthetic method for making keto alkynes
 (c) the reaction starts with formation to tosylhydrazone
 (d) the starting material is the epoxide of an α,β -unsaturated ketone

2. Which product is formed as a major product in following reaction?



- (a) CN(C)C1=CC=CC=C1 (b) C1=CC=CC=C1C(=O)N1CCCC1
 (c) C=CCCCC=O (d) C=CCCCC(=O)O

3. The sequence of Michael reaction followed by cyclization is known as _____.

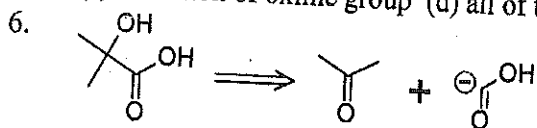
- (a) Mannich reaction (b) Robinson annulation
 (c) acyloin condensation (d) benzoin condensation

4. Which of the following is the synthetic equivalent for the synthon $\ominus\text{CH}_3$?

- (a) CH_3Br (b) CH_3Li (c) CH_3Cl (d) both (a) & (c)

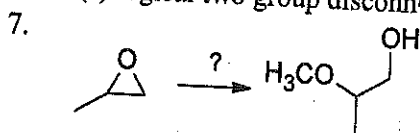
5. 2^o-amine can be prepared by _____.

- (a) reduction of cyano group (b) reduction of nitro group
 (c) reduction of oxime group (d) all of these



The above disconnection is _____.

- (a) illogical two group disconnection (b) one group disconnection
 (c) logical two group disconnection (d) no group disconnection



The reagent used for above transformation is _____.

- (a) NaOCH_3 (b) NaOEt (c) $\text{MeOH/H}_2\text{O}$ (d) MeOH/H^+

8. Which of the following reagent used for allylic bromination?

- (a) NBS (b) Br_2 (c) Both (a) & (b) (d) None of these

①

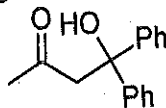
(PTO)

Q-2 Answer the following (Any Seven). [14]

1. Define the terms (a) Synthons (b) Disconnection
2. Complete the following scheme.

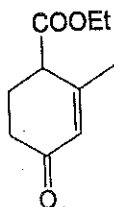


3. With detail mechanism, explain acyloin condensation.
 4. Give the mechanism for conversion of acetophenone from phenylacetylene.
 5. State at least two methods for preparation of 1,2-diol.
 6. Give the synthesis of styrene oxide using sulphur ylide.
 7. Write about protection and deprotection of aldehyde and ketone group.
 8. Show the dimerization products of unsubstituted, monosubstituted and disubstituted ketenes.
 9. Write down requirements of good protecting group.
- Q-3 [A] 1. Explain the use of control in organic synthesis. Using this approach plan [06]
the synthesis of the following molecule.

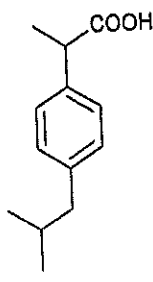


2. Justify the following statement, formylation of 2-methyl cyclohexanone with ethyl formate under alkaline condition is regioselective reaction. [06]
- [B] Do the disconnection and plan the synthesis of following molecules. [06]

1.



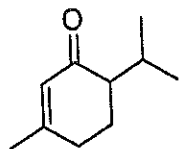
2.



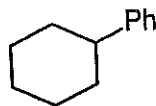
OR

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

1.

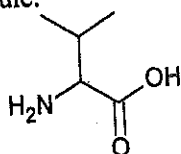


2.



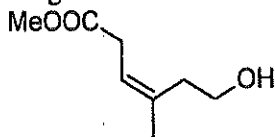
Q-4 [A] Answer the following. [06]

1. Write Strecker amino acid synthesis and plan the synthesis of following molecule.



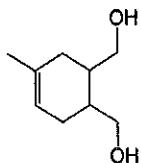
(2)

2. Give the general strategy for disconnection of 1,6-dicarbonyl compounds, using this approach do the disconnection and plan the synthesis of following molecule.



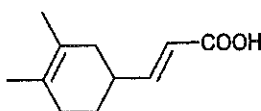
[B] Do the disconnection and plan the synthesis for the following molecules using given direction. [06]

1.

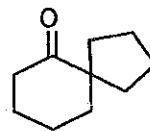


(Use of Diels Alder reaction)

2.



3.

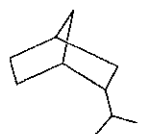


(Use of pinacol reduction and pinacol rearrangement)

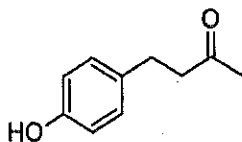
OR

[B] What is FGA? Using this approach do the disconnection and plan the synthesis of following molecule [06]

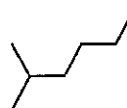
1.



2.

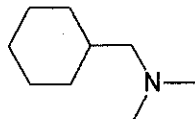


3.

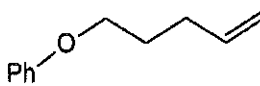


Q-5 [A] Do the disconnection and plan the synthesis for the following molecules containing heteroatom. [06]

1.

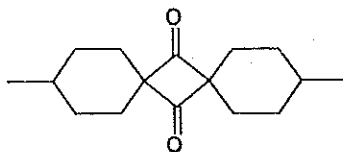


2.

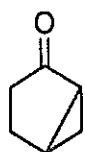


[B] Do the disconnection and plan the synthesis for the following molecules. [06]

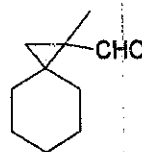
1.



2.



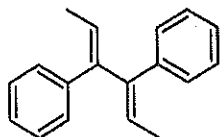
3.



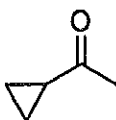
OR

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

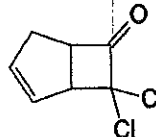
1.



2.



3.



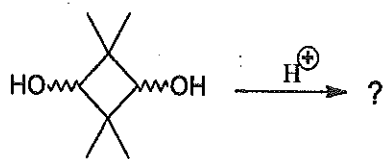
Q-6 [A] Answer the following.

1. State at least three methods for protection and deprotection of alcohol.

(3)

(PTO)

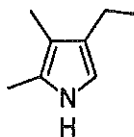
2. Complete the following reaction with detailed mechanism.



[B] Answer the following.

[06]

1. State at least three methods for protection and deprotection of amine.
2. Give the synthesis of pyrrole derivative used in the synthesis of mesoporphyrin-IX.



OR

[B] Comments on the following reactions on the basis of pull-push chemistry with detailed reaction mechanism. [06]

