

Time: 2:30 Hours

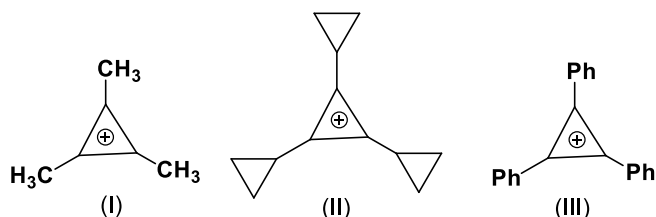
Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

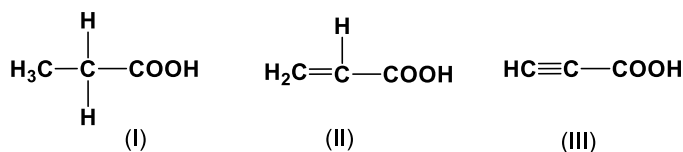
UNIT-1 (14 marks)Answer **ALL** questions**Q.1 (a) Answer the following****4 Marks**

- (1) Arrange the following intermediates according to their increasing order of stability. Justify your answer.



2

- (2) Arrange the following carboxylic acid according to their increasing order of pKa. Justify your answer.



2

Q.1 (b) Answer any two question out of three.**10 Marks**

- (1) What is Benzyne? Describe generation and reactivity of Benzyne. 5
- (2) What is homolytic fission? Explain photolytic and thermolytic cleavages with examples. 5
- (3) Describe structure, generation and reactivity of nitrene. 5

UNIT-2 (14 marks)Answer **ALL** questions**Q.2 (a) Answer the following****4 Marks**

- (1) Give Huckel's rule for aromatic and anti-aromatic compounds. 2
- (2) Match the following:

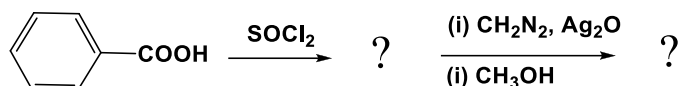
<u>Structure</u>	<u>Character</u>
	Aromatic
	Non-aromatic
	Anti-aromatic
	Homo-aromatic

2

Q.2 (b) Answer any two question out of three.	10 Marks
(1) Why anti-aromatic compounds are less stable compare to aromatic compounds? Explain with example.	5
(2) Explain aromaticity in: (a) squaric acid (b)Tropylium ion	5
(3) Discuss aromaticity of annulenes.	5

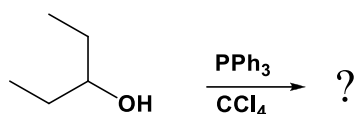
UNIT-3 (14 marks)
Answer ALL questions

Q.3 (a) Answer the following	4 Marks
(1) Identify the reaction and complete the following reaction sequence:	



2

- (2) Identify the following reaction and write corresponding product:

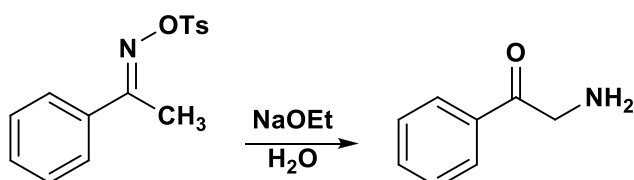


2

Q.3 (b) Answer any two question out of three.	10 Marks
(1) Describe principle, reaction mechanism and at least four applications of Vilsmeier-Haack reaction.	5
(2) Write a note on Michael addition reaction.	5
(3) Describe principle, reaction mechanism and three applications of Mitsunobu reaction.	5

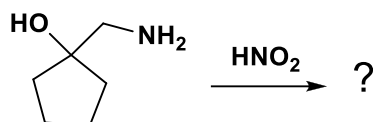
UNIT-4 (14 marks)
Answer ALL questions

Q.4 (a) Answer the following	4 Marks
(1) Identify the following rearrangement and write its mechanism:	



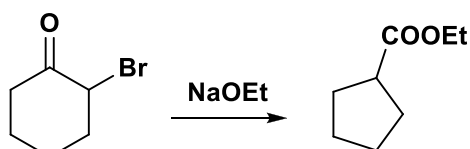
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- (2) Identify the following reaction and write corresponding product:



2

Q.4 (b) Answer any two question out of three.	10 Marks
(1) Describe Principle, mechanism and at least four applications of Wagner-Meerwein rearrangement.	5
(2) Identify the following rearrangement, write its mechanism and give three applications:	



5

- (3) Explain principle, reaction mechanism, stereo-specificity and three applications of Beckmann rearrangement.

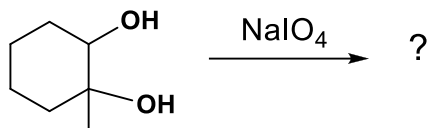
5

UNIT-5 (14 marks)
Answer ALL questions

Q.5 (a) Answer the following

4 Marks

- (1) Predict the product of the following reaction & write its mechanism.



2

- (2) Write structure of Jones reagent & give its two application.

2

Q.5 (b) Answer any two question out of three.

10 Marks

- (1) Write a note on swern oxidation. 5
- (2) Explain Birch reduction with examples. 5
- (3) Describe preparation and four applications of LAH reagent. 5
