

TDC Odd Semester Exam., 2020  
held in July, 2021

## CHEMISTRY

( Honours )

( 5th Semester )

Course No. : CHMH-502

( Organic Chemistry—V )

Full Marks : 35

Pass Marks : 12

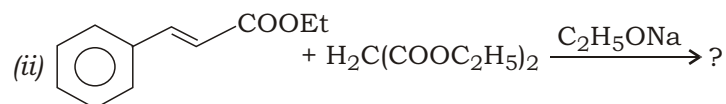
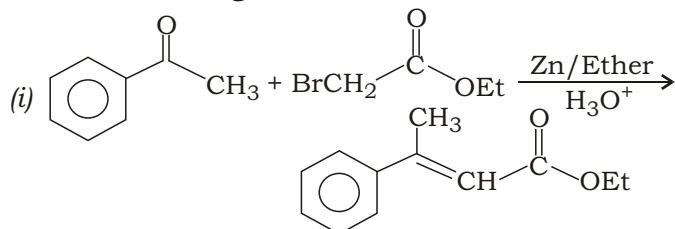
Time : 2 hours

The figures in the margin indicate full marks  
for the questions

Answer **five** questions, taking **one** from each Unit

## UNIT—I

1. (a) Suggest suitable mechanism for the following reactions :  $2\frac{1}{2} \times 2 = 5$

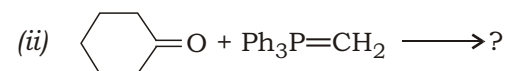
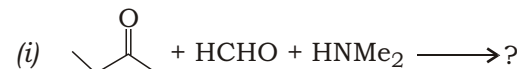


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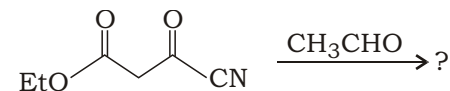
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- (b) What are Michael reactions? Discuss the mechanism of such reactions with suitable examples. 2

2. (a) Complete the following reactions, name them and write their mechanism :  $3 \times 2 = 6$

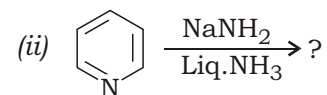
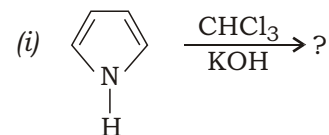


- (b) Write the product of the following : 1



## UNIT—II

3. (a) Write the mechanism of Fischer indole synthesis. 3
- (b) Explain the order of basicity of pyridine, piperidine and pyrrole. 2
- (c) Complete the following reactions :  $1 \times 2 = 2$



10-21/835

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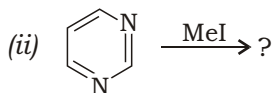
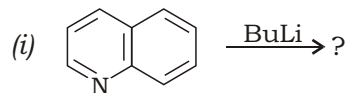
( 3 )

4. (a) Explain the following observations :  $2 \times 2 = 4$

(i) Electrophilic substitution in pyrrole takes place at 2-position but that in pyridine occurs at 3-position.

(ii) Thiophene is more aromatic in nature than furan and pyrrole.

(b) Complete the following reactions :  $1 \times 3 = 3$

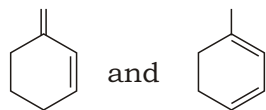


UNIT—III

5. (a) Write a brief note on metastable ion. 2

(b) Explain why the intensity of  $n$  transition is relatively lower than  $\pi$  transition. 2

(c) Distinguish between the following pair of compounds by UV-visible spectroscopy : 3



10-21/835

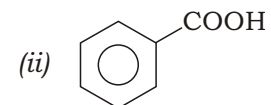
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6. (a) How can you distinguish  $\text{CH}_3\text{CH}_2\text{OH}$  and  $\text{CH}_3\text{COCH}_3$  by IR spectroscopy? 2

(b) Write the possible range of IR spectra for the following compounds :  $1 \times 2 = 2$

(i)  $\text{CH}_3\text{COOH}$



(c) Identify the geometric isomers of stilbene  $\text{H}_5\text{C}_6\text{CH}=\text{CHC}_6\text{H}_5$ , from their  $\lambda_{\text{max}}$  values 294 nm and 278 nm with appropriate reason. 2

(d) What is molecular ion peak? 1

UNIT—IV

7. (a) Draw and explain different steps in the Jablonski diagram. 3

(b) Provide the mechanisms of the following :  $2 \times 2 = 4$

(i) Photoreduction of benzophenone

(ii) Photo-Fries rearrangement

8. (a) Discuss Frank-Condon principle. 2

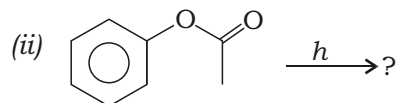
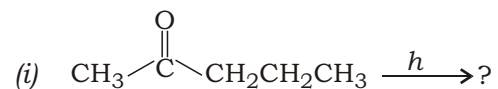
(b) What is Norrish Type-I reaction? Give one example. 2

10-21/835

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- (c) Complete the following reactions and write the mechanism :  $1\frac{1}{2}\times 2=3$



UNIT—V

9. (a) Write the structures with names of the bases present in DNA and RNA. 3
- (b) What are enzymes? Write two characteristics of enzyme.  $1+2=3$
- (c) What are coenzymes? 1
10. (a) What is ATP? How does ATP energise a biological reaction? 2
- (b) Discuss the process of glycolysis. 3
- (c) Write the structure of a bile acid and discuss its function. 2

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