

2015

(5th Semester)

CHEMISTRY

FIFTH PAPER (CHEM-351)

(Organic Chemistry—II)

Full Marks : 55

Time : 2½ hours

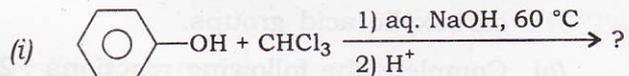
(PART : B—DESCRIPTIVE)

(Marks : 35)

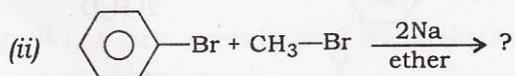
The figures in the margin indicate full marks for the questions

1. (a) Draw the MO picture of non-benzoid compound. 2

(b) Complete the following reactions : 2½+2½=5



(Reimer-Tiemann reaction)



(Wurtz-Fittig reaction)

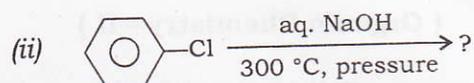
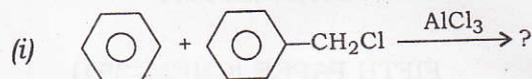
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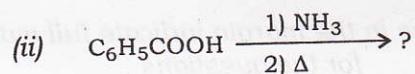
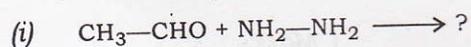
2. (a) Discuss the acidic character of phenol. 3

(b) Complete the following reactions : 2+2=4



3. (a) What is benzoin condensation? Discuss with mechanism. 3

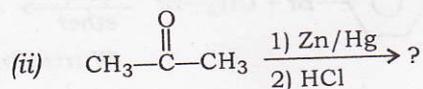
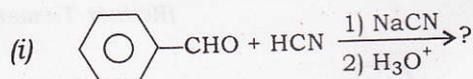
(b) Complete the following reactions : 2+2=4



OR

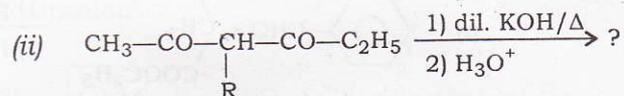
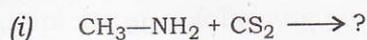
4. (a) Discuss in brief giving suitable example the effect of substituents on the acidity of carboxylic acid groups. 2

(b) Complete the following reactions : 2½+2½=5



5. (a) Write the basic differences between tautomerism and resonance. 2

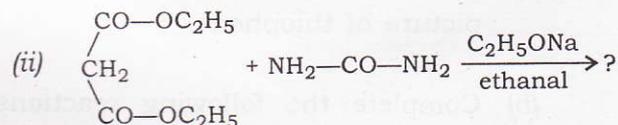
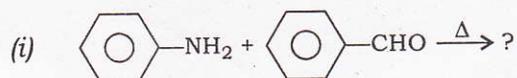
(b) Complete the following reactions : $2\frac{1}{2}+2\frac{1}{2}=5$



OR

6. (a) Discuss Hinsberg test for distinguishing 1° , 2° and 3° amines. 3

(b) Complete the following reactions : $2+2=4$



7. (a) Write short notes on the following : $2\frac{1}{2}+2\frac{1}{2}=5$

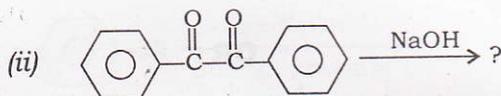
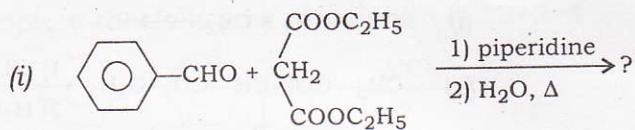
(i) Reformatsky reaction

(ii) Wagner-Meerwein reaction

(b) What are acetals and ketals? Give one example of each. 2

OR

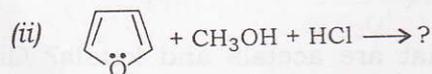
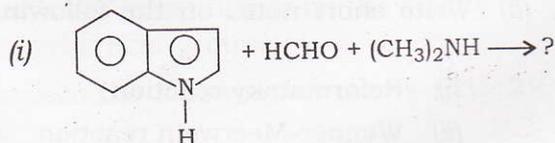
8. (a) Complete the following reactions with mechanisms : $2\frac{1}{2}+2\frac{1}{2}=5$



- (b) What are esters and amides? Give one example of each. 2

9. (a) Draw the resonance molecular orbital picture of thiophene. 2

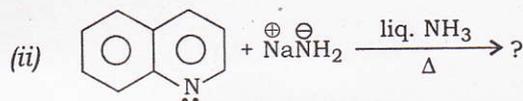
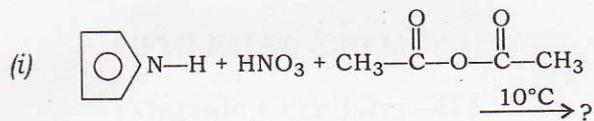
- (b) Complete the following reactions with mechanism : $2\frac{1}{2}+2\frac{1}{2}=5$



OR

10. (a) Discuss the structure of pyridine. 2

(b) Complete the following reactions with mechanism : $2\frac{1}{2}+2\frac{1}{2}=5$



2015

(5th Semester)

CHEMISTRY

FIFTH PAPER (Chem-351)

(Organic Chemistry—II)

(PART : A—OBJECTIVE)

(Marks : 20)

The figures in the margin indicate full marks for the questions

SECTION—I

(Marks : 5)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×5=5

1. When phenol is substituted by electron withdrawing groups at para-position, the acidity

(a) will be increased ()

(b) will be decreased ()

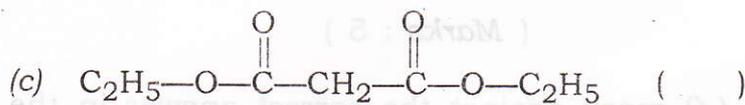
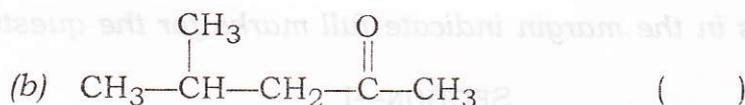
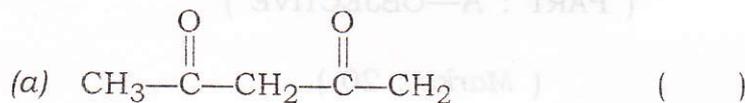
(c) will remain same ()

(d) None of the above ()

2. Aldol condensation reaction can take place only in aldehydes and ketones having

- (a) α -hydrogen ()
 (b) β -hydrogen ()
 (c) γ -hydrogen ()
 (d) None of the above ()

3. Which of the following molecules does not consist of active methylene group?



4. Pinacol-pinacolone rearrangement is a rearrangement reaction of

- (a) diols to monoketone ()
 (b) diols to diketone ()
 (c) monoalcohol to monoketone ()
 (d) monoalcohol to diketone ()

5. In Skraup synthesis of quinoline, the reagents are

(a) aniline and glycerol ()

(b) phenyl hydrazine and pyruvic acid ()

(c) cinnamaldehyde and hydroxylamine ()

(d) None of the above ()

SECTION—II

(Marks : 15)

Answer the following questions in not more than 6 sentences each : $3 \times 5 = 15$

1. Write a short note on Hückel rule.

2. What is Perkin reaction? Write with mechanism.

(a) aniline and acetic anhydride

(b) phenylhydrazine and pyruvic acid

(c) cinnamaldehyde and hydroxylamine

(d) None of the above

3. Discuss with example, the effect of substituent on basicity of aromatic amines.

Answer the following questions in not more than 5 sentences each.

1. Write a short note on Hückel rule.

4. Discuss Friedel-Craft acylation reaction with suitable example along with mechanism.

(5th Semester)

CHEMISTRY

FIFTH PAPER (Chem-351)

(Organic Chemistry—II)

(PART : A—OBJECTIVE)

(Marks : 20)

The figures in the margin indicate full marks for the questions

SECTION—I

(Marks : 5)

Put a Tick [✓] mark against the correct answer in the brackets provided :

1. When benzene is substituted by electron withdrawing groups at para position, the acidity

- (a) will be increased []
- (b) will be decreased []
- (c) will remain same []
- (d) None of the above []

5. Discuss the comparative basicity of pyrrole/pyridine, pyrrole/pyrrolidine and pyridine/piperidine.

- (a) α -hydrogen ()
- (b) β -hydrogen ()
- (c) γ -hydrogen ()
- (d) None of the above ()

3. Which of the following molecules does not consist of active methylene group?

- (a) $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$ ()
- (b) $\text{CH}_3-\overset{\text{CH}_3}{\underset{|}{\text{C}}}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$ ()
- (c) $\text{C}_2\text{H}_5-\text{O}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{C}_2\text{H}_5$ ()
- (d) $\text{N}=\text{C}-\text{CH}_2-\text{COOC}_2\text{H}_5$ ()

4. Pinacol-pinacolone rearrangement is a rearrangement reaction of

- (a) diols to mono-ketone ()
- (b) diols to diketone ()
- (c) monoalcohol to mono-ketone ()
- (d) monoalcohol to di-ketone ()