2014

(5th Semester)

CHEMISTRY

FIFTH PAPER (CHEM–351)

(Organic Chemistry—II)

Full Marks : 55

Time : 2 hours

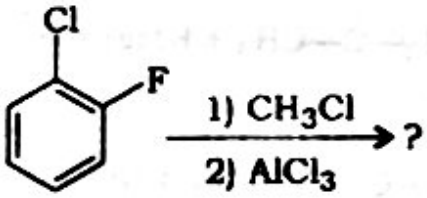
(PART : B—DESCRIPTIVE)

(*Marks* : 35)

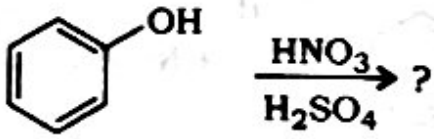
The figures in the margin indicate full marks for the questions

1. *(a)* What is Hückel rule? Discuss with few examples. 2

(b) Complete the following reactions : 1½+1½+2

(i) 

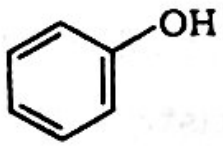
(ii) 

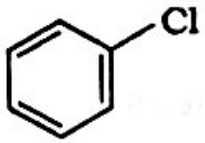
(iii) 

OR

2. *(a)* Draw MO picture of benzene. 1½

(b) Complete the following reactions with mechanisms : 1½+2½

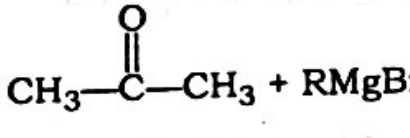
(i) 

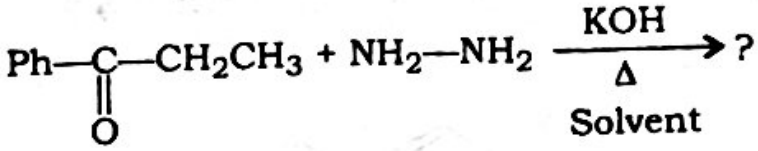
(ii) 

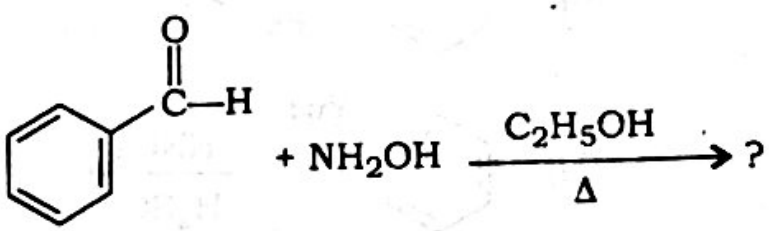
(c) Why is phenoxide anion stable? 1½

3. *(a)* What is Cannizaro reaction? Discuss with example. 2½

(b) Complete the following reactions with suitable mechanisms : 1½×3

(i) 

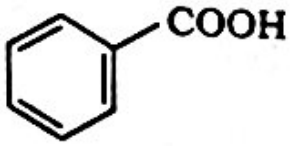
(ii) 

(iii) 

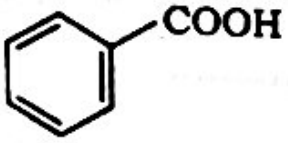
OR

4. *(a)* Write any two methods for preparation of carboxylic acid. 1+1

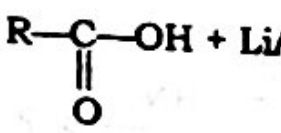
(b) Complete the following reactions : 1+1+2+1

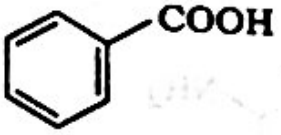
(i) 

$+ SOCl_2 \longrightarrow ?$

(ii) 

$+ PCl_5 \longrightarrow ?$

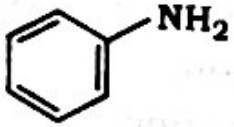
(iii) 
$+ LiAlH_4 \xrightarrow{\text{Ether}} ? \xrightarrow{H_3O^+} ?$

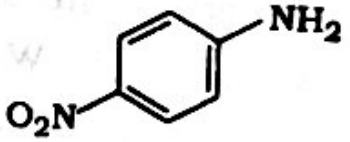
(iv) 

$+ CH_3OH \xrightarrow{H_2SO_4} ?$

5. *(a)* What is carbylamine reaction? Discuss with example. 2½

(b) Arrange the following amines in decreasing order of basicity. Discuss it. 2

(i) 

(ii) 

(iii) 

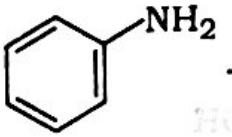
(c) What is keto-enol tautomerism? 1½

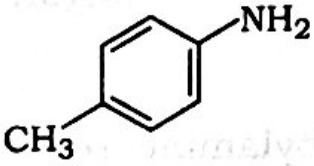
(d) Write any two synthetic uses of ethyl acetoacetate. 1

OR

6. (a) Complete the following reactions with suitable mechanisms : 2+1½+2

(i) Ethyl acetoacetate + R—Br $\xrightarrow[\text{Ether}]{\text{NaO Ethyl}}$?

(ii)  $\xrightarrow[H_2SO_4]{HNO_3}$?

(iii)  $\xrightarrow[HCl]{NaNO_2}$? $\xrightarrow{CuCl}$?

(b) What is nitrosamine? 1½

7. (a) Write short notes on the following : 2+2

(i) Wittig reaction

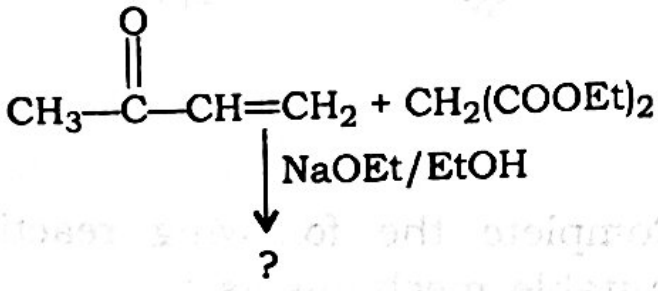
(ii) Mannich reaction

(b) What is pinacol-pinacolone rearrangement? Discuss with example. 3

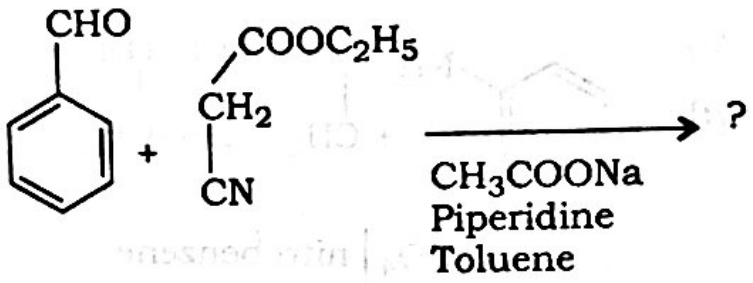
OR

8. *(a)* Complete the following reactions with suitable mechanisms : 2×3=6

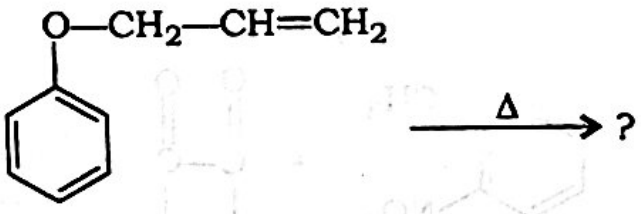
(i)



(ii)



(iii)



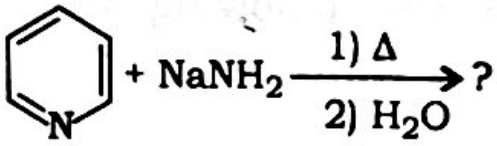
(b) What is Hofmann rearrangement? 1

9. *(a)* Write the preparation method of furan. 1½

(b) Compare the basicity of pyrrole and pyridine and justify it. 2

(c) What is the hybridization of heteroatom in pyrrole and thiophene? 2

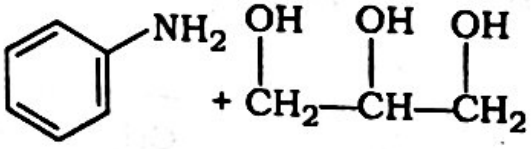
(d) Complete the following with mechanism : 1½

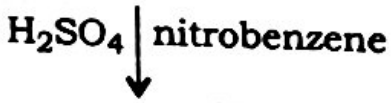


OR

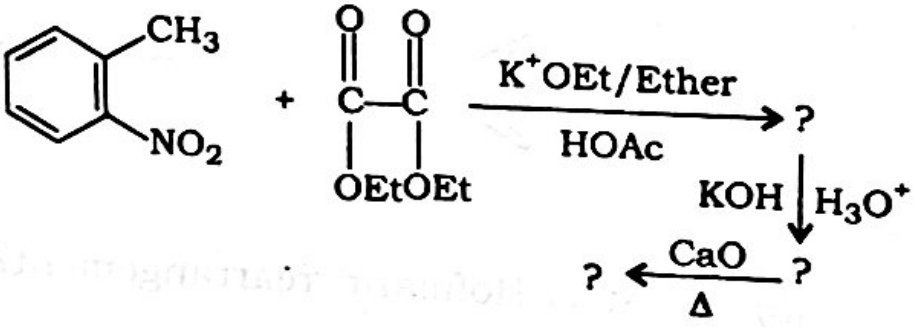
10. (a) Complete the following reactions with suitable mechanisms : 2½+3½

(i)





(ii)



(b) What is Fries rearrangement? 1

★★★

2014

(5th Semester)

CHEMISTRY

FIFTH PAPER (Chem-351)

(Organic Chemistry—II)

(PART : A—OBJECTIVE)

(*Marks* : 20)

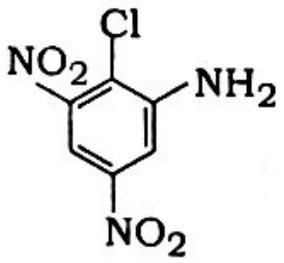
The figures in the margin indicate full marks for the questions

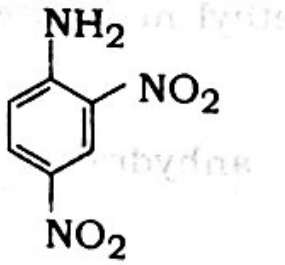
SECTION—I

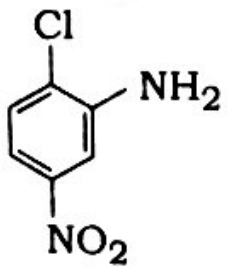
(*Marks* : 5)

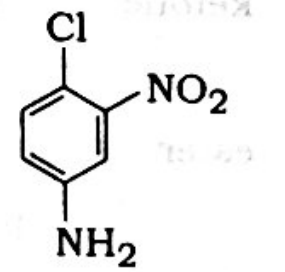
Put a Tick (✓) mark against the correct answer in the brackets provided for it : 1×5=5

1. 1-Chloro-2,4-dinitrobenzene heated with ammonia at high pressure gives

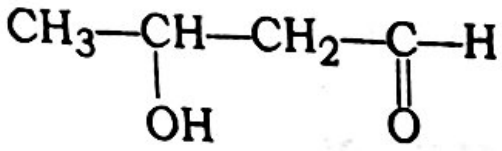
(a)  ( )

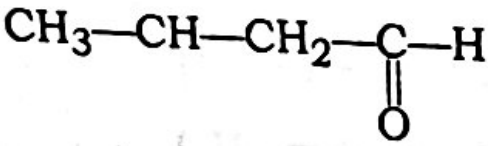
(b)  ( )

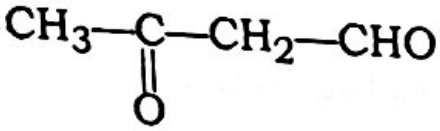
(c)  ( )

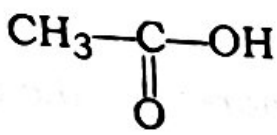
(d)  ( )

2. CH_3CHO treated with NaOH in aq. medium gives

(a)  ( )

(b)  ( )

(c)  ( )

(d)  ( )

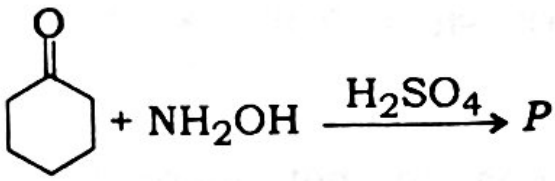
3. Diethyl malonate is

(a) anhydride ( )

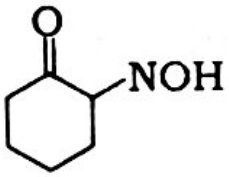
(b) ketone ( )

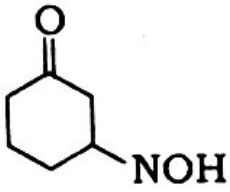
(c) ester ( )

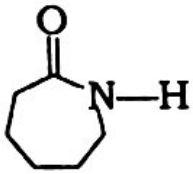
(d) diester ( )

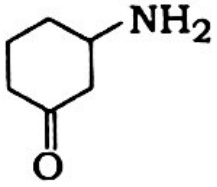
4. 

Here *P* is

(a)  ( )

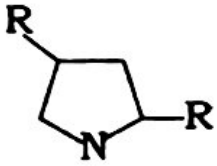
(b)  ( )

(c)  ( )

(d)  ( )

5. Pyrrole reacts with RMgBr and gives

(a)  ( ) (b)  ( )

(c)  ( ) (d)  ( )

SECTION—II

(*Marks* : 15)

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

1. Discuss the nucleophilic substitution reaction in F, Cl, Br and iodobenzene compounds and arrange them in order of reactivity.

2. What is Clemmensen reduction? Discuss with mechanism.

3. How does tautomerism differ with resonance? Explain it.

4. What are acetals and ketals? How can you synthesize acetal?