

M.Sc. Semester-III (C.B.C.S.) Examination

PHARMACEUTICAL CHEMISTRY

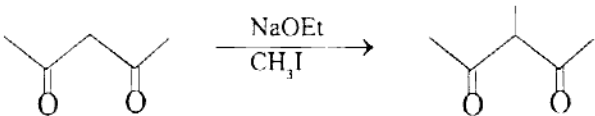
Paper—3SA3

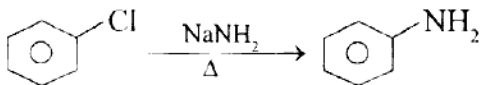
(Advanced Organic Chemistry—I)

Time : Three Hours]

[Maximum Marks : 80

Note :— ALL questions are compulsory and carry equal marks.

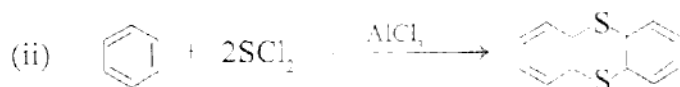
1. (a) What will be the reaction intermediate formed in each of the following reactions ? 6
 - (i) $\text{Ph}-\text{CH}_2-\text{Cl} + \text{H}_2\text{O} \longrightarrow \text{Ph}-\text{CH}_2-\text{OH} + \text{HCl}$
 - (ii) $\text{Ph}-\text{CO}-\text{NH}_2 + \text{Br}_2 + \text{NaOH} \longrightarrow \text{Ph}-\text{NH}_2$
 - (iii) 

$$\text{CH}_3\text{COCH}_2\text{COCH}_3 \xrightarrow[\text{CH}_3\text{I}]{\text{NaOEt}} \text{CH}_3\text{COCH}(\text{CH}_3)\text{CH}(\text{CH}_3)\text{COCH}_3$$
 - (iv) 

$$\text{C}_6\text{H}_5\text{Cl} \xrightarrow[\Delta]{\text{NaNH}_2} \text{C}_6\text{H}_5\text{NH}_2$$
 - (v) $\text{CH}_2=\text{Cl}_2 + \text{NaOH} + \text{C}_6\text{H}_5\text{OH} \longrightarrow \text{C}_6\text{H}_4(\text{OH})(\text{CHO})$
 - (vi) $\text{R}-\text{COO}^\ominus\text{K}^\oplus \xrightarrow{\text{Electrolysis}} \text{R}-\text{R} + \text{CO}_2$
 - (b) What are nitrines ? How are they generated ? Discuss their structure, stability and character. 5
 - (c) Explain effect of structure on reactivity with suitable example. 5
- OR**
- (p) Explain localised and delocalised chemical bonding giving suitable examples. 6
 - (q) Discuss the mechanism of Neighbouring group. 5
 - (r) What are various methods for determining the mechanism of reaction ? Explain any one of them with suitable example. 5
2. (a) Give structures and names of the principal organic products expected from each of the following reactions : 6
 - (i) 2, 3-dibromopropene + NaOH (aq)
 - (ii) p-chlorotoluene + hot KMnO_4
 - (iii) m-Bromostyrene + Br_2/CCl_4
 - (iv) p-Bromobenzyl alcohol + cold dilute KMnO_4
 - (v) p-Bromobenzyl alcohol + conc. HBr
 - (vi) o-Bromoanisole + $\text{K}^+\text{N}^- \text{Et}_2/\text{Et}_2\text{NH}$

(b) Suggest mechanism for each of following reactions :

5



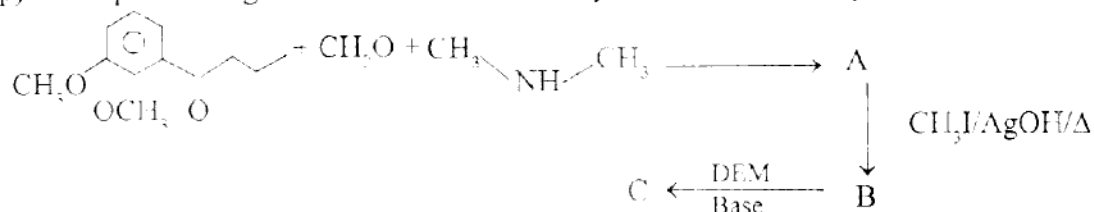
(c) Explain the protection and deprotection of Hydroxyl group.

5

OR

(p) Complete the given reaction and identify the intermediate products.

6



(q) Explain the protection and deprotection of amino group.

5

(r) Discuss E₁CB mechanism with suitable examples.

5

3. (a) Explain following techniques for preparing chiral drugs :

Chirality pool and enzymatic transformation.

6

(b) Explain the importance of chiral drug in brief.

5

(c) Explain the asymmetric synthesis.

5

OR

(p) Explain the neighbouring group effect. How will you explain the rate of reaction ?

6

(q) What are advantages of providing drug in enantiomerically pure form ? Explain in brief.

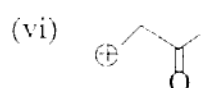
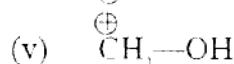
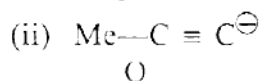
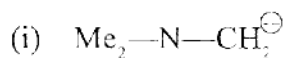
5

(r) How is intramolecular nucleophilic attack effective on rate of reaction ?

5

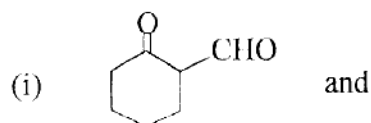
4. (a) Write the synthetic equivalents of the following synthons :

6



(b) Give the retrosynthesis analysis of the following :

5



(c) Explain :

5

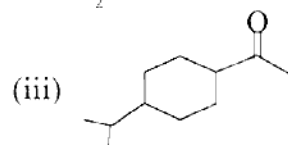
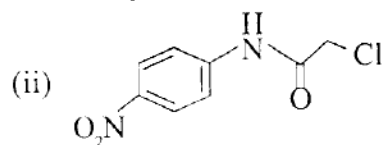
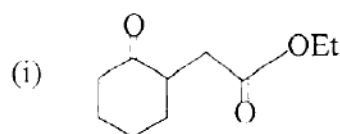
(i) FGI and

(ii) Difunctional compounds.

OR

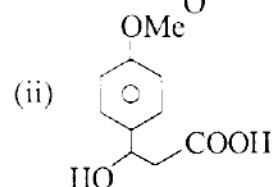
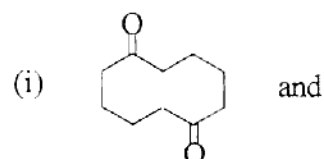
(p) Discuss the analysis and retrosynthesis of the following compounds :

6



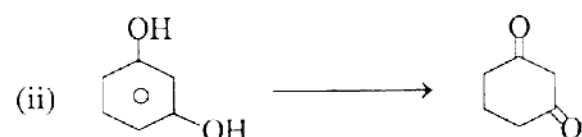
(q) Discuss the disconnection approach of the following :

5



(r) Complete the following synthesis :

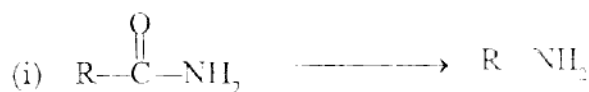
5



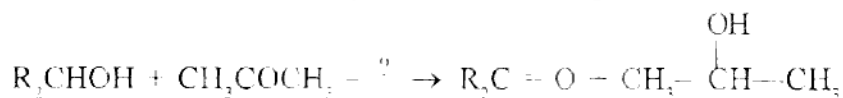
5. (a) Explain with mechanism of the following : 6
- (i) Reformatsky reaction and
- (ii) Oppenauer oxidation.
- (b) What are Grignard reagents ? Explain the role of GR in organic synthesis. 5
- (c) Explain the different types of ozonolysis reactions in brief with suitable examples. 5

OR

- (p) Complete the following reactions with proper mechanism : 6



- (q) Write the name and complete the following reaction with mechanism : 5



- (r) Complete the following reaction and explain the product formation : 5

