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AQ–945

M.Sc. (Semester—II) (CBCS Scheme) Examination

PHARMACEUTICAL CHEMISTRY

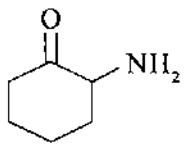
(Organic Synthesis)

Paper—2 SA II

Time—Three Hours] [Maximum Marks—80

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

1. (a) Design the retrosynthesis of following molecules :

(i) 

(ii) $CH_3 - \overset{O}{\overset{\|}{C}} - CH_2 - CH_2 - \overset{O}{\overset{\|}{C}} - OCH_3$. 6

(b) Explain the following :

(i) Functional Group addition

(ii) Interconversion of functional group. 6

(c) Discuss the formation of carbon-carbon single bond with example. 4

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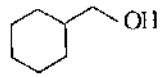
(p) Design the synthesis of following molecules :

(i) 

(ii) 

6

(q) Explain the concept of Transform and Retrons with suitable examples. 6

(r) Write the strategy for retrosynthesis of compound containing carbonyl group. 4

2. (a) Discuss the application of following inorganic synthesis :

(i) LDA

(ii) Tri-n-butyltin hydride. 6

(b) Explain following hydroxylations :

(i) Osmium tetra-oxide hydroxylation

(ii) Woodward-Prevost hydroxylation. 6

(c) What are Crown ethers ? Discuss their synthetic applications. 4

OR

(p) Explain the concept of Umpoloung of reactivity (dipole inversions) with examples. 6

(p) Explain the coupling reactions involving organo copper and organo nickel complexes. 6

(q) Discuss the carbene and its synthetic applications. 6

(r) Discuss C-alkylation using enolates. 4

5. (a) Discuss the selection rule for cyclo-addition of [3 + 2] addition. 6

(b) What are modern methods of cyclo-addition reactions ? 6

(c) Discuss Grignard reagent as Chiral reagent. 4

OR

(p) Write the applications of cyclo-addition reactions in organic synthesis. 6

(q) Write in brief on :

(i) Chiral Lewis acid catalysis

(ii) Asymmetric reduction. 6

(r) Explain the Dienes and Heterdienes with suitable examples. 4

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(q) Discuss the synthetic applications of :

(i) Selenium dioxide

(ii) Gilman's reagent. 6

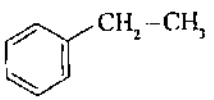
(r) What are phase transfer catalyst ? Discuss their applications in synthesis. 4

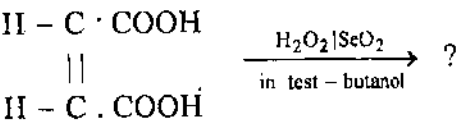
3. (a) Explain the reductions of following compounds :

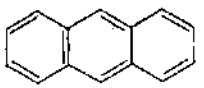
(i) Ketones to alcohols, and

(ii) Alkenes to alkanes. 6

(b) Predict the products in :

(i) 

(ii) 

(iii) 

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(c) Explain the reduction with sodium borohydride reagent. 4

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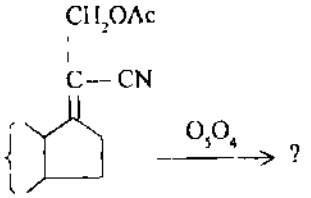
(p) Explain the oxidation in following compounds :

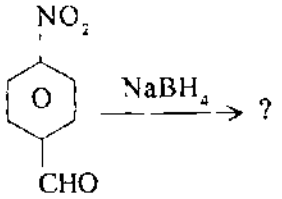
(i) Alcohols to ketones, and

(ii) Phenols to quinones. 6

(q) Predict the products :

(i) 

(ii) $HCOOH \xrightarrow{O_5O_4/KClO_3} ? + ?$

(iii) 

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(r) Explain catalytic hydrogenation with suitable examples. 4

4. (a) Explain the role of thio and seleno carbanions in organic synthesis. 6

(b) Write the structure of enamine and show how it acts as synthetic reagent in organic chemistry. 6

(c) Give brief account of Aldol condensation. 4

OR

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