

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

B. Pharmacy Sem-IV Remedial Examination Nov/Dec. 2010

Subject code: 240003

Subject Name: Pharmaceutical Chemistry-IV

Date: 03/12/2010

Time: 02.30 pm – 05.30 pm

### Instructions:

Total Marks: 80

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Differentiates between the following with suitable examples. **06**  
i) Enantiomers and Diastereomers  
ii) Configuration and Conformation  
iii) R and S notation
- (b) Each of the following compounds having medicinal value. Identify all chiral centers and indicate how many stereoisomers are possible? **05**  
i)  $\text{CH}_2\text{OH}(\text{CHOH})_4\text{CHO}$  Hexose  
ii)  $p\text{-O}_2\text{N-Ph-CH}(\text{OH})\text{CH}(\text{CH}_2\text{OH})\text{NHCOCHCl}_2$  Chloramphenicol  
iii)  $\text{Ph-CH}(\text{Cl})\text{CONHCONH}_2$   $\alpha$ -Chloro  $\alpha$ -phenyl acetyl urea  
iv)  $\text{CH}_2\text{OH}(\text{CH}_3)_2\text{C}(\text{OH})\text{CHCONHCH}_2\text{CH}_2\text{COOH}$  Pentothenic acid  
v)  $p\text{-OH-C}_6\text{H}_4\text{-CH}_2\text{CH}(\text{NH}_2)\text{-COOH}$  Tyrosine
- (c) Write an informative note on **05**  
i) Stereochemistry of Biphenyl  
ii) Stereochemistry of Allene
- Q.2** (a) Explain the term aromaticity. What is meant by electrophilic substitution reaction? Illustrate your answer with reference to reactions of benzene **06**
- (b) How will you convert **05**  
i) Aniline to p-Nitro Aniline  
ii) Toluene to m-nitro benzoic acid  
iii) Aniline to Phenol  
iv) Phenol to Aspirin  
v) Naphthalene to Phthalic anhydride
- (c) What are phenols? How do they differ from alcohols? Discuss the synthesis of phenol from cumene. **05**
- Q.3** (a) What do you understand by carbonyl compounds? Why carbonyl compound undergo nucleophilic addition reaction? Give three general methods of preparation of aldehydes. **06**
- (b) Explain the details mechanism involved in aldol condensation and canizzaro reaction. **05**
- (c) Write a confirmative note on **05**  
i) Perkin's reaction  
ii) Knoevenagel reaction
- Q.4** (a) Explain the following statements. **06**  
i) Chloroacetic acid is stronger than acetic acid  
ii) The carbonyl group in carboxylic acid does not react with phenyl hydrazine  
iii) Boiling point of an acid is higher than that of alcohol with same number of carbon atom.

- iv) Acetone is less reactive than Acetaldehyde.  
 v) p-Hydroxyl benzaldehyde does not undergo canizzaro's reaction.  
 vi) Salicylic acid on treatment with bromine in aqueous solution readily form 2,4,6 tribromo phenol.
- (b) Give the detail mechanism of Hofmann hypobromite reaction **05**  
 (c) What do you understand by acid derivative of carboxylic acid? Enlist the various acid derivatives. Give one general method for preparation of each. **05**
- Q.5** (a) What are amines? How are they classified? Discuss any three general method of preparation and three reactions of amines. **06**  
 (b) Explain the following statements **05**  
 i) p-Toludine is strong base than aniline  
 ii) Amides are much weaker base than amines  
 iii) Acetyl chloride is a strong acetylating agent than acetic anhydride  
 iv)  $\beta$ -keto acids undergo decarboxylation reactions.  
 v) Methyl amine is stronger base than ammonia  
 (c) What do you understand by reactive methylene group? Describe the synthesis of aceto acetic ester and explain the mechanism of reaction involved. Describe its utility in organic synthesis. **05**
- Q. 6** (a) What do you understand by polynuclear aromatic compounds? Indicate how the following compound can be prepared from naphthalene **06**  
 i) Benzene ii)  $\beta$ -Naphthol iii) Anthranilic acid  
 (b) Give the chemistry of anthracene **05**  
 (c) Discuss the Haworth synthesis for naphthalene **05**
- Q.7** (a) What do you understand regarding the Nanochemistry? How this technique is involved in organic synthesis? Give brief idea about green chemistry. **06**  
 (b) What do you understand by Grignard reagents? Discuss its utility in organic chemistry with specific example. **05**  
 (c) Write an informative note on **05**  
 i) Schotten-Baumann reactions.  
 ii) Pinnacol rearrangement reaction

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