

GUJARAT TECHNOLOGICAL UNIVERSITY
B. Pharm. – SEMESTER – IV • EXAMINATION – SUMMER • 2014

Subject Code: 240003**Date: 21-05-2014****Subject Name: Pharmaceutical Chemistry - IV****Time: 02:30 pm - 05:30 pm****Total Marks: 80****Instructions:**

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

- Q.1** (a) What are amines? **06**
Explain why aliphatic amines are more basic as compared to aromatic amines.
- (b) Comment on low reactivity of aryl halides towards nucleophilic aromatic substitution reaction. **05**
- (c) Enlist various reactions of amines and discuss the formation of alkenes from amines. **05**
- Q.2** (a) What is racemic mixture? **06**
Discuss any three methods to resolve racemic mixture.
- (b) Give different reactions of alkylbenzenes. **05**
- (c) Halogens though are electron withdrawing give ortho-para orientation in electrophilic aromatic substitution reaction. **05**
Explain with structural examples.
- Q.3** (a) What are carbonyl compounds? **06**
Give four different methods for preparation of ketones.
- (b) Explain Nitrile synthesis for the preparation of carboxylic acids and comment on the effect of substituents on acidity of carboxylic acids. **05**
- (c) What is nanochemistry? Discuss application of nanochemistry in Pharmacy. **05**
- Q.4** (a) Discuss with reaction mechanism Howarth synthesis of Naphthalene. **06**
- (b) What is conformation? Discuss various conformers of n-butane with respect to stability and potential energy. **05**
- (c) Explain why the addition of bromine to cis and trans 2-butene is stereospecific as well as stereoselective. Support your answer with suitable reaction mechanism. **05**
- Q.5** (a) Explain benzyne mechanism giving suitable evidence for each step. **06**
- (b) Nitration occurs at alpha position in naphthalene more rapidly as compared to beta position. Explain with structural examples. **05**
- (c) Enlist various reactions of aldehydes and ketones. **05**
Explain reactions of Grignard reagent with aldehyde and ketones.
- Q.6** (a) Draw structures of following compounds. **06**
i. 3-Nitro-4'-methylbenzophenone ii. 2-Methylbutanoic acid
iii. N-Isobutylaniline iv. 2-Methylpropenoic acid
v. 1,4 diphenyl-1,3-butadiene vi. 2,4-dinitrobenzonitrile
- (b) Give a brief account on stereochemistry of spirans. **05**
- (c) What are esters? Explain mechanism of acid catalyzed transesterification. **05**
- Q.7** (a) Explain Michael addition with examples and reaction mechanism. **06**
- (b) Comment on side chain halogenations of alkylbenzene. **05**
- (c) Discuss Hell-Volhard-Zelinsky reaction with mechanism. **05**