

GUJARAT TECHNOLOGICAL UNIVERSITY
B. Pharm - SEMESTER– III• EXAMINATION – WINTER-2014

Subject Code: 2230004**Date: 24/12/2014****Subject Name: Pharmaceutical Chemistry IV (Organic Chemistry I)****Time: 10.30 am – 1.30 pm****Total Marks: 80****Instructions:**

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

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| Q.1 | (a) Enumerate various methods for quantitative estimation of nitrogen. Describe in detail about Dumas method. | 06 |
| | (b) Explain in detail Molecular orbital theory. | 05 |
| | (c) Write a note on bonding and anti-bonding orbitals. | 05 |
| Q.2 | (a) Correct if necessary and justify the following statements.
a) Nitrogen trifluoride has dipole moment less than ammonia.
b) Hyperconjugation is also called no-bond resonance.
c) Lower alcohols are insoluble in water. | 06 |
| | (b) Define hybridization and hybrid orbital. Explain in detail sp ² hybridization of carbon. | 05 |
| | (c) Describe the importance of resonance and hyperconjugation in stability and reactivity of molecules. | 05 |
| Q.3 | (a) Correct if necessary and justify the following statements.
a) Primary carbocation is more stable than tertiary carbocation.
b) Alcohols are having higher boiling point than ether.
c) Benzene undergoes electrophilic substitution reaction. | 06 |
| | (b) What are reactive intermediates of carbon? Describe in detail out carbocation. | 05 |
| | (c) Differentiate between S _N 1 and S _N 2 reaction. | 05 |
| Q.4 | (a) How alcohols differ from phenol? Give detail mechanisms of aldol condensation. | 06 |
| | (b) State Saytzeff's orientation and Markovnikov rules with examples. | 05 |
| | (c) What are polynuclear aromatic compounds? Explain in detail Haworth synthesis for naphthalene. | 05 |
| Q.5 | (a) Correct if necessary and justify the following statements.
a) Cycloheptatrienyl cation is aromatic according to Hückel's rule.
b) Dehydration of tertiary alcohol is faster than primary alcohol.
c) Alkynes are more acidic than alkane. | 06 |
| | (b) Explain detailed mechanism of dehydrohalogenation of alkyl halide. | 05 |
| | (c) What is symmetrical and asymmetrical ether? Write a brief note Williamson's ether synthesis? | 05 |
| Q.6 | (a) Explain the two step mechanism of electrophilic aromatic substitution with its evidence. | 06 |
| | (b) Explain the mechanism of halogenation for alkane. | 05 |
| | (c) Define with examples, enantiomers, E & Z geometric isomers, conformation. | 05 |
| Q.7 | (a) Give importance of Grignard reagent in various reactions. | 06 |
| | (b) Give types, preparation and reaction of dienes. | 05 |
| | (c) Explain with examples hydrogen bonding and London force. | 05 |