

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV(New) • EXAMINATION – WINTER 2016****Subject Code:2143606****Date:24/11/2016****Subject Name:Advanced Organic Chemistry for Technologists****Time:02:30 PM to 05:00 PM****Total Marks: 70****Instructions:**

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

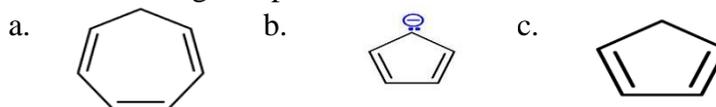
MARKS

- | | | |
|------------|---|-----------|
| Q.1 | Short Questions | 14 |
| | <ol style="list-style-type: none"> 1 Define: Pericyclic reaction. 2 Pyridine has a delocalized π molecular orbital containing _____electron. 3 Cyclo Pentadiene is aromatic or non aromatic? 4 How many isomers are possible for C_4H_8? 5 Draw the structure of [16] – Annulene. 6 Racemic mixture of tartaric acid is optically_____. 7 Which fraction of coal-tar contains naphthalene? 8 Furan reacts with ammonia in the presence of alumina at $400^{\circ}C$ to give_____. 9 Phenol on distillation with Zn dust gives_____. 10 Define the term Enantiomers. 11 In chlorination of benzene, $FeCl_3$ is used to generate_____. 12 Define the term: Annulene. 13 [14] – Annulene is aromatic or non aromatic? 14 What is the possible number of optical isomers for a compound containing 3 dissimilar asymmetric carbon atoms? | |
| Q.2 | (a) Write a note on: Diastereomers | 03 |
| | (b) Explain why, Methyl ($-CH_3$ group) acts as ortho-para director. | 04 |
| | (c) Distinguishing SN^1 and SN^2 reactions, Explain the mechanism of nucleophilic attack on substrate during course of reaction. | 07 |
| | OR | |
| | (c) Define Aromaticity. Explain Huckel rule in detail showing the behavioral approach of different Organic molecules in proving their aromatic characteristics. | 07 |
| Q.3 | (a) Write a short notes on: Coal-tar distillation | 03 |
| | (b) Write a note on: Optical isomerism of Tartaric acid. | 04 |
| | (c) Explain Pinacol Pinacolone rearrangement with mechanism in details | 07 |

OR

- Q.3 (a)** Explain why, Nitro (-NO₂ group) acts as ortho-para director. **03**
- (b)** Write a note on: Optical isomerism of Lactic acid. **04**
- (c)** Explain Benzidine rearrangement with mechanism in details **07**

- Q.4 (a)** State whether the following compounds are aromatic or non-aromatic. **03**



- (b)** Give IUPAC and general names of the following compounds **04**



- (c)** Explain why, **07**
1. Pyridine is more basic than pyrrole.
 2. Pyridine is less basic than aliphatic amine.
 3. Pyridine is more basic than aniline.

OR

- Q.4 (a)** Write a short notes on: Petroleum as sources of aromatic compounds **03**

- (b)** Explain Claisen - Dieckmann condensation in details **04**

- (c)** Explain why, **07**

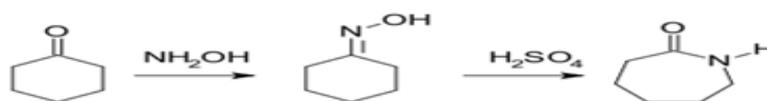
1. Phenol is more acidic than ethyl alcohol?
2. p-Nitrophenol is a stronger acid than phenol?
3. o-Nitrophenol is steam volatile whereas p-Nitrophenol is not?

- Q.5 (a)** Which of the following will exhibit optical activity? **03**

1. Meso-2,3-Dihydroxybutane
2. Mixture of 1 gm of (+)-erythro-2-bromo-3-chloro butane & 0.5 gm (-)-erythro-2-bromo-3-chloro butane

- (b)** Explain MPV reduction in details **04**

- (c)** Name the following reaction and Explain its mechanism & application in detail. **07**



OR

- Q.5 (a)** Which of the following compound show geometrical isomerism. **03**

1. CH₃CH=CH₂
2. CH₃C(Br)=C(Br)CHCH₃
3. CH₃CH₂CH₂CH=CHCH₃

- (b)** Explain Skruap synthesis with mechanism. **04**

- (c)** How is furan synthesized? Describe its important reaction. **07**
