Seat No.: _____ Enrolment No._____

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**

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 400^0C 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 nucleophillic 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**

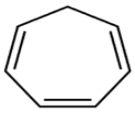
OR

Q.3 **(a)** Explain why, Nitro (-NO_2 group) acts as ortho-para director. **03**

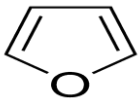
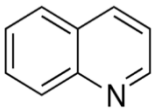
(b) Write a note on: Optical isomerism of Lactic acid. **04**

(c) Explain Benzidine rearrangement with mechanism in details **07**

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

a.  b. c.

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

a.  b. 

(c) Explain why, **07**

1. Pyridine is more basic than pyrolle.
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**

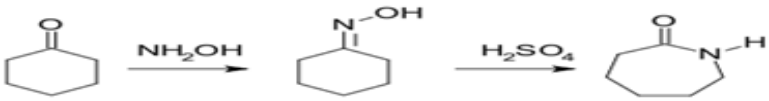
1. Phenol is more acidic than ethyl alcohol?
2. p-Nitrophenol is a stronger acid than phenol?
3. o-Nitrophenol is steam volatile whereas p-Nitrophenol is not?

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. $CH_3CH=CH_2$
2. $CH_3C(Br)=C(Br)CHCH_3$
3. $CH_3CH_2CH_2CH=CHCH_3$

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

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

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