Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (New) EXAMINATION – WINTER 2015

Subject Code:2143606 **Date:04/01/2016**

Subject Name: Advanced Organic Chemistry for Technologists

Time: 2:30pm to 5:00pm **Total Marks: 70**

Instructions:

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

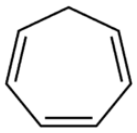
Q.1	**(a)**	1. Explain why the methyl group ($-CH_3$) acts as ortho-para director.	**04**
		2. Explain why the nitro group ($-NO_2$) acts as m-director.	**03**
	(b)	Distinguishing S_N^1 and S_N^2 reactions, Explain the mechanism of nucleophilic attack on substrate during reaction.	**07**
Q.2	**(a)**	Explain Pinacol-Pinacolone rearrangement with mechanism.	**07**
	(b)	Write a short notes on:	
		a. Coal-tar distillation.	**03**
		b. Petroleum as sources of aromatic compounds.	**04**
		OR	
	(b)	Explain in detail the biological importance due to presence of one, two and poly hetero atoms in Heterocyclic compounds.	**07**
Q.3	**(a)**	Explain why,	**07**
		a. Pyridine is more basic than pyrolle.	
		b. Pyridine is less basic than aliphatic amine.	
		c. Pyridine is more basic than aniline.	
	(b)	How is phenol prepared? Explain its chemical properties also.	**07**
		OR	
Q.3	**(a)**	How is furan synthesized? Describe its important reaction.	**07**
	(b)	Explain why,	**07**
		a. Phenol is more acidic than ethyl alcohol?	

b. p-Nitrophenol is a stronger acid than phenol?

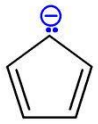
c. o-Nitrophenol is steam volatile whereas p-Nitrophenol is not?

Q.4 **(a)** 1. State whether the following compounds are aromatic or non-aromatic. Give reason also. **02**

a.



b.



2. What is Huckel rule? Write the structure of two compounds that follow this rule. **02**

3.Write a note on: Annulene **03**

(b) 1. How will you synthesize DDT? **03**

2. Explain Skruap synthesis with mechanism. **04**

OR

Q.4 **(a)** Write a note on: Reduction of aromatic nitro compound. **07**

(b) How is pyrrole synthesized? What happens when pyrrole treated with the following reagents: **07**

a. Nitric acid in acetic anhydride at -10^{0}C.

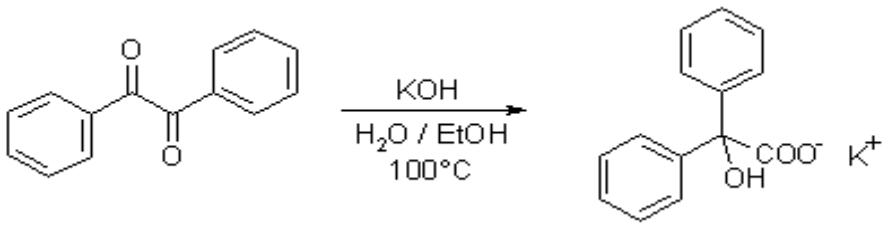
b. Sulfur trioxide in pyridine.

c. Benzenediazonium chloride.

d. Bromine in alcohol.

Q.5 **(a)** Who were the pioneers of Alkylation & Acylation reaction? Explain its mechanism. **07**

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



OR

Q.5 **(a)** Explain in detail the Curtius rearrangement with at-least one example of isocyanate utility in polymerization. **07**

(b) Explain following reaction with mechanism:

a. Mannich Reaction **03**

b. Favorskii Reaction **04**

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