Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–III • EXAMINATION – SUMMER • 2014**

**Subject Code: 133604** **Date: 23-05-2014**

**Subject Name: Chemistry of Intermediates and Colorants - I**

**Time: 02.30 pm - 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.**

**Q.1 (a)** What is a Dye? How are dyes classified on the basis of method of application? **07**

**(b)** Give synthesis, application and uses of Anthraquinone. **07**

**Q.2 (a)** Explain why, **07**

a. Pyridine is more basic than pyrrole.
b. Pyridine is less basic than aliphatic amine.
c. Pyridine is aromatic.

**(b)** Define the term Electrophile and Nucleophile. Explain Electrophilic aromatic substitution reaction with the mechanism. **07**

**OR**

**(b)** What happen when Anthracene is treated with, **07**

a. $Br_2/CCl_4$
b. $O_2/V_2O_5$ at $500^0C$
c. $HNO_3/CH_3COOH$
d. $Na/C_2H_5OH$
e. $Na_2Cr_2O_7/H_2SO_4$

**Q.3 (a)** How will you synthesized following compound from ethyl acetoacetate? **07**

a. Crotonic Acid
b. Succinic acid
c. 2,4-Pentanedione
d. 2,5-Hexanedione
e. n-Butyric acid

**(b)** Write down only chemical reactions involved in following conversions:

a. Naphthalene → Koch acid **03**
b. Koch acid → H-acid **04**

**OR**

**Q.3 (a)** Define the following term with example:

a. Chromophor **04**
b. Auxochrome **03**

**(b)** Write a note on:

a. Electrophilic substitution reaction of Pyridine. **04**
b. Nucleophilic substitution reaction of Pyridine. **03**

**Q.4 (a)**

a. Explain Bucherer reaction. **03**
b. Give the synthesis of R-acid and G-acid. **04**

**(b)** Write a note on: Hawarth synthesis of Anthracene. **07**

**OR**

| | | | |
|---|---|---|---|
| **Q.4** | **(a)** | a. How will you synthesize Amino G-acid and Amino J-acid from B-naphthyal amine? | **04** |
| | | b. Convert Benzene into Alizarin. | **03** |
| | **(b)** | Discuss Hammet substitution constant. | **07** |
| **Q.5** | **(a)** | Write a note on: α-naphthol mono-sulfonic acid, di-sulfonic acid and tri-sulfonic acid. | **07** |
| | **(b)** | a. Write a note on: Coal-tar Primaries. | **03** |
| | | b. Distinguish between Dyes and Pigments. | **04** |

**OR**

| | | | |
|---|---|---|---|
| **Q.5** | **(a)** | What happen when, | |
| | | a. Naphthalene is treated with concentrated sulfuric acid at $165^0$C. | **07** |
| | | b. Naphthalene is warmed with concentrated $HNO_3$ /$H_2SO_4$. | |
| | | a. Naphthalene is heated with oxygen in the presence of $V_2O_5$. | |
| | **(b)** | What is Heterocyclic Compound? How is Pyrazolone synthesized? Describe its important reactions. | **07** |

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