

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V • EXAMINATION – WINTER 2013****Subject Code: 153604****Date: 02-12-2013****Subject Name: Technology of Intermediates and Colorants****Time: 10:30 pm to 01:00 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 are the various process parameters required for quality, raw material and safety aspects of any unit process. (Give suitable example named unit processes used in Dyes industry). **07**
- (b)** Explain safety aspects of Nitration and what precautions you can suggest in order to avoid local heating and run away reaction. **07**
- Q.2 (a)** Write a note on: “Sulphonation” as a unit process. **07**
- (b)** Write a note on: **03**
1. Ionic liquids. **04**
 2. Various solvents used for unit processes and selection criterion for the same.
- OR**
- (b)** Draw Block flow diagram for “Nitration of Benzene” and list material of construction for various components. **07**
- Q.3 (a)** How will you synthesis; **07**
1. H- acid
 2. Phenol and
 3. Aniline
- (b)** Differentiate between process flow diagram and block flow diagram with the help of example (One unit process with description is necessary) **07**
- OR**
- Q.3 (a)** 1. Write a synthesis of BON acid. **03**
2. Write a synthesis of 2-hydroxynaphthalene. **04**
- (b)** Enlist various solvents used for sulphonation and their advantages. **07**
- Q.4 (a)** Which types of technologies are used in the production of Azo dyes and direct dyes? Compare their pros and cons also. **07**
- (b)** Explain reactive dyes in detail. **07**
- OR**
- Q.4 (a)** Write a note on continuous, semibatch and batch process and describe the principles of isomer separation. **07**
- (b)** Write a note on: “Nitrating agents” **07**
- Q.5 (a)** Write a note on: 1. Amination 2. Ammonolysis **04+03**
- (b)** 1. Explain Friedel Craft’s reaction with examples **04**
2. Write a note on: Hydroxylation **03**
- OR**
- Q.5 (a)** 1. Write the various available routes for synthesis of Anthraquinone. **04**
2. State uses of Anthraquinone system in dyes **03**
- (b)** Write a note on: 1. Reduction 2. Hydrogenation **04+03**
