

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VIII • EXAMINATION – SUMMER • 2015**

**Subject Code: 183604**

**Date: 05/05/2015**

**Subject Name: New Technologies & Products**

**Time: 10:30 am - 1:00pm**

**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)** Write down the importance of Catalysts in Hydrogenation process. Explain Homogeneous and Heterogeneous Catalysts for Hydrogenation. **7**

**(b)** Write a brief note on equipments used for hydrogenation in Dyes & Pigments industry. **7**

**Q.2 (a)** Write down applications of hydrogenation technology in Dyes & Pigments industry. **7**

**(b)** Explain the following terms: **7**  
(i) Hue (ii) Saturation (iii) Lightness

**OR**

**(b)** Write a brief note on Plug Flow Reactors, Packed Bed Reactors and Continuous Stirred-Tank Reactors used in Dyes and Pigments industry. **7**

**Q.3 (a)** What is Pigment dispersion? Discuss the stages of pigment dispersion with suitable diagrammatical representation. **7**

**(b)** Describe the methods of manufacturing of copper Phthalocyanine pigments with suitable reaction scheme. **7**

**OR**

**Q.3 (a)** Explain the anticorrosive pigments with its mechanism in details. **7**

**(b)** What is meant by process optimization? Explain the six steps used to solve the process optimization problem. **7**

**Q.4 (a)** Explain the statistical quality control techniques for dyestuff industries. **7**

**(b)** i) Justify: A large number of modern organic pigments are synthetic organic in nature. **7**  
ii) Write a note on: colour index.

**OR**

**Q.4 (a)** Write a brief note on : **7**

i) Pigment used in specialty inks (ii) Pigment used in paints

**(b)** Explain the newer methods of production of pigments. **7**

**Q.5(a)** What is pigment? Discuss the following properties of the pigments are important in selecting a pigment for any particular product. **7**

(i) Hiding power (ii) Particle size & Shape (iii) Refractive index

**(b)** Explain the optical properties of absorption pigments, effect pigments and natural pearls with its suitable diagrammatic representation. **7**

**OR**

**Q.5(a)** Define the flop index & Discuss the model used to explain the flake orientation during film formation. **7**

**(b)** Explain the pearl effect pigments with variable controlling pearl effect. **7**

\*\*\*\*\*