

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE – SEMESTER – VII • EXAMINATION – WINTER 2014**

**Subject Code:173602****Date: 29/11/ 2014****Subject Name: Process Technology of Drugs & Intermediates****Time: 10:30 AM 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)** Define the following terms: (i) Hazard, (ii) Safety, (iii) Atom Economy, (iv) Oxygen Balance, (v) Turnover Number, (vi) Enantiomeric excess (vii) Process Validation **07**
- (b)** List out any seven reasons for choosing a ‘Solvent’ in Chemical Development **07**
- Q.2 (a)** What are aims of Chemical Development? Explain ‘Investigative Approach’ in Chemical Development with suitable example/s **07**
- (b)** Most of the lead compounds fail in becoming medicines. List out any seven ‘roadblocks’, which are responsible for this observation seen often. **07**
- OR**
- (b)** What are salient features of a starting material ‘wish list’? **07**
- Q.3 (a)** Give schematically, catalytic mechanism of Lipases, based on a catalytic triad. Explain the role of each amino acid. **07**
- (b)** Give classification of Enzymes. Why Lipases are most versatile classes of biocatalysts in organic synthesis? Give reasons. **07**
- OR**
- Q.3 (a)** What are advantages and disadvantages of using biocatalyst? **07**
- (b)** Write short notes on (i) Pilot plant objectives (ii) Oxynitrilases **07**
- Q.4 (a)** What are different types of hazards in chemical processing? Explain in detail chemical reaction hazards. **07**
- (b)** Certain functional groups are likely to introduce hazards into the chemical process individually or jointly. List out any seven such functional groups. **07**
- OR**
- Q.4 (a)** What factors are needed to be varied in streamlining the development process? Explain your answer with suitable example/s **07**
- (b)** Discuss mixing mechanisms, at different levels and under different flow conditions (laminar/turbulent). Define power number and indicate graphically, variation of power number with Reynold’s number, explain the graph. **07**
- Q.5 (a)** What is a supercritical fluid? What are advantages and disadvantages of employing Carbon Dioxide as a supercritical fluid? **07**
- (b)** Write short notes on (i) Homogeneous catalysis (ii) Polymorphism **07**
- OR**
- Q.5 (a)** Identify the difference between a heterogeneous catalyst and a homogeneous catalyst in terms of the following: (a) ease of recovery, (b) collision frequency, (c) temperature sensitivity and (d) cost **07**
- (b)** Write short notes on (i) Filters and Centrifuges (ii) Solvation **07**

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