Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – WINTER 2015

Subject Code: 173602 **Date:04/12/2015**

Subject Name: Process Technology of Drugs and Intermediates

Time: 10:30am to 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)**	Give classification of enzymes. Why lipases are most versatile classes of biocatalysts in organic synthesis. Give reasons.	**07**
	(b)	(i) Discuss mixing mechanisms at different levels and under different (laminar/turbulent) flow conditions.	**04**
		(ii) Define power number and indicate graphically, variation of power number with Reynolds number. Explain the graph.	**03**
Q.2	**(a)**	Define the following terms: (1) Hazard (2) Safety (3) Atom Economy (4) Oxygen balance (5) Turnover number (6) Enatiomeric Excess (7) Process validation	**07**
	(b)	What factors are needed to be varied in streamlining the development process? Explain your answer with suitable examples.	**07**
		OR	
	(b)	What are factors responsible for waste reduction programme in Chemical Industry?	**07**
Q.3	**(a)**	Identify the differences between a heterogeneous catalyst and a homogeneous catalyst in terms of the following: (a) Ease of recovery (b) Collision of frequency (c) Temperature sensitivity & (d) Cost.	**07**
	(b)	What is a supercritical fluid? What are the advantages & disadvantages of employing Carbon dioxide as supercritical fluid?	**07**
		OR	
Q.3	**(a)**	(i). Derive the enzyme reaction kinetics equation under steady state $V=V_{max}[S] / K_m+[S]$. Also graphically explain various features of Michaelis-Menten kinetics.	**04**
		(ii). Write short note on Oxynitilases.	**03**
	(b)	Certain functional groups are likely to introduce hazards into the chemical process individually or jointly. List out any seven such functional groups	**07**
Q.4	**(a)**	Most of Lead compounds fail in becoming medicines. List out any seven “roadblocks” which are responsible for this observation seen often.	**07**
	(b)	Write short notes on (1) Filters & Centrifuges (2) Solvation (3) Polymorphism	**07**
		OR	
Q.4	**(a)**	What are salient features of a starting material ‘wish list’?	**07**
	(b)	Give schematically, catalytic mechanism of lipases based on a catalyst triad. Explain the role of each amino acids	**07**
Q.5	**(a)**	(i) Describe enzyme immobilization by CLECs & CLEAs approaches.	**04**
		(ii)Explain, showing sequences, immobilization of lipases on silica nanoparticles.	**03**
	(b)	What are the advantages & disadvantages of using a biocatalyst?	**07**
		OR	
Q.5	**(a)**	List out any seven reasons for choosing a ‘solvent’ in chemical development.	**07**
	(b)	What are the aims of chemical development? Explain ‘Investigative Approach’ in chemical development with suitable examples.	**07**

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