

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 173601

Date: 04/05/2017

Subject Name: Basics of Catalysis

Time: 02:30 PM to 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) Describe briefly about classification of industrial catalytic processes **07**
(b) Explain determination of surface area using BET Equation. **07**
- Q.2** (a) Write a short note on experimental methods of finding rates for solid catalyzed reaction **07**
(b) Discuss steps involved in sol gel method of preparing catalysts. **07**
- OR**
- (b) Differentiate the fixed bed and fluidized bed reactor. **07**
- Q.3** (a) Discuss the various resistances encountered in catalytic reaction. **07**
(b) Write a brief not about temperature-time trajectories. **07**
- OR**
- Q.3** (a) Differentiate: Physical adsorption and Chemisorption. **07**
(b) Determination of deactivation kinetic parameters for a reaction occurs in a mixed flow reactor under changing flow condition so that concentration is constant. Let parallel deactivation occur. Assume the main reaction to be nth order and the deactivation reaction to be of first order in activity 'a'. **07**
- Q.4** (a) What are the significance of pore structure and surface area in heterogeneous catalysis? **07**
(b) What are adsorption isotherms and adsorption isobar? **07**
- OR**
- Q.4** (a) Discuss various components of solid catalyst. **07**
(b) Discuss elementary and non-elementary reactions. **07**
- Q.5** (a) List various methods for finding order of reaction, explain any one in detail. **07**
(b) Discuss and define Molecularity and order of reaction **07**
- OR**
- Q.5** (a) Compare Integral method of analysis with differential method of analysis. **07**
(b) Derive Design equation for Plug Flow Reactor containing solid catalyst. **07**
