Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) EXAMINATION – WINTER 2018

Subject Code:2141306 Date:22/11/2018

Subject Name:Elements of Chemical Engg

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.**

			MARKS
Q.1	**(a)**	Differentiate between elementary and non-elementary reaction.	**03**
	(b)	Differentiate Single and multiple reactions.	**04**
	(c)	State & explain classification of reactions.	**07**
Q.2	**(a)**	Define Space time and space velocity.	**03**
	(b)	What are the parameters that affects rate of reaction.	**04**
	(c)	Temperature dependency from Arrhenius's law. Explain.	**07**
		OR	
	(c)	Discuss temperature dependency from thermodymics.	**07**
Q.3	**(a)**	Differantiate between (i) Homogeneous Reaction, (ii) Heterogeneous Reaction	**03**
	(b)	Define(i) Rate constant (ii) PFR (iii) Molecularity (iv) Order of reaction.	**04**
	(c)	Write a short note on Fixed bed reactor.	**07**
		OR	
Q.3	**(a)**	Write about the advantages and disadvantages of a batch reactor.	**03**
	(b)	Describe half-life method for finding the order of reaction.	**04**
	(c)	Draw a neat sketch with short note on (i) Continuous reactor. (ii) Mix flow reactor.	**07**
Q.4	**(a)**	Write down only the temperature dependency equation from collision theory for like and unlike molecules.	**03**
	(b)	Differentiate between series and parallel reaction with example.	**04**
	(c)	Make a material balance for CSTR.	**07**
		OR	
Q.4	**(a)**	Write a short note on autocatalytic reactors.	**03**
	(b)	Explain the second order reaction with example	**04**
	(c)	Make a material balance for Ideal batch reactor.	**07**
Q.5	**(a)**	Enlist & explain the ways to transfer heat.	**03**
	(b)	Write a short note on RTD.	**04**
	(c)	Give relation between F and E curves with necessary information.	**07**
		OR	
Q.5	**(a)**	Enlist the characteristics of tracer.	**03**
	(b)	List the various parameters to be considered for reactor design.	**04**
	(c)	Explain Tank-in-series model to represent non-ideal flow.	**07**

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