Seat No.:_____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:2153611 **Date:27/11/2018**

Subject Name:Green Chemistry for Technologists

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.**

			MARKS
Q.1	**(a)**	Explain in detail TAML^{TM} activators.	**03**
	(b)	Explain the role of 'Green Chemistry' for sustainable development.	**04**
	(c)	Define Ionic liquids. What are characteristic properties of ionic liquids?	**07**
Q.2	**(a)**	Write a note on: microwave reactions.	**03**
	(b)	How sonochemistry is associated with green chemistry?	**04**
	(c)	Write a note on: microwave chemistry.	**07**
		OR	
	(c)	What are supercritical fluids? Take CO_2 as example and explain in detail.	**07**
Q.3	**(a)**	Elaborate minimization of pollution via greener routes of synthesis.	**03**
	(b)	What are renewable feed stocks? Explain with the help of a raw material obtained from renewable feedstock?	**04**
	(c)	Explain twelve principles of Green Chemistry, with suitable examples.	**07**
		OR	
Q.3	**(a)**	Discuss any two inherently atom efficient reactions.	**03**
	(b)	Explain principle of reduced derivatization.	**04**
	(c)	Explain benefits of 'Green Chemistry' to human health, environment and economy & business.	**07**
Q.4	**(a)**	Explain safer chemicals design, with examples.	**03**
	(b)	Establish the difference between green chemistry & general chemistry.	**04**
	(c)	Are supercritical fluids green in nature? Justify your answer with the help of suitable example.	**07**
		OR	
Q.4	**(a)**	What do you mean by green solvents? Explain with examples.	**03**
	(b)	Why there is need to have green chemistry in industries?	**04**
	(c)	Write short note: (i) Atom Economy (ii) E-factor (iii) Process Mass Intensity.	**07**
Q.5	**(a)**	Give the greener route of synthesis of hydrazine.	**03**
	(b)	What is Process Intensification? What is its significance?	**04**
	(c)	Provide Green Route of Synthesizing the following: (a) Aniline (b) Ibuprofen (c) Isocyanates	**07**
		OR	
Q.5	**(a)**	Give the greener route of synthesis of Phenol.	**03**
	(b)	Calculate atom economy of butyl bromide in the following reaction: $CH_3CH_2CH_2CH_2OH + NaBr + H_2SO_4 \longrightarrow C_4H_9Br + NaHSO_4 + H_2O$.	**04**
	(c)	Explain the harmful effects of Lead, Asbestos and Mercury pollution in brief.	**07**