Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (NEW) - EXAMINATION – SUMMER 2018

Subject Code: 2183907 Date: 02/05/2018

Subject Name: Chemical Principles of Self Assembly Systems(Department Elective -III)

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)	Discuss principles of molecular imprinting with suitable diagrams.	03
	(b)	Discuss the properties of nanocrystals self-assembly?	04
	(c)	Define monolayers? Discuss preparation of SAMs by the	07
Q.2	(a)	Write the applications of molecular imprinting,	03
	(b)	Write a note on self-assembly process.	04
	(c)	Discuss colloidal nanolithography by using nanocrystals organized in a given structures as a mask?	07
		OR	
	(c)	How packing geometry is affected by the effect of surfactant concentration and chain length?	07
Q.3	(a)	Give a brief description of inter particle bonds?	03
	(b)	Write about various characterization techniques of SAMs?	04
	(c)	Write a short note on: Surface Passivation	07
		OR	
Q.3	(a)	Discuss growth from the solution phase of SAMs?	03
	(b)	Discuss the structures of cube like and tetrahedral like nanocrystals?	04
	(c)	Discuss structures of SAMs?	07
Q.4	(a)	Discuss growth from gas phase of SAMs?	03
	(b)	Explain building molecular architectures by molecular imprinting?	04
	(c)	Give a brief account on surface defects and Ultra small particles and magic numbers?	07
		OR	
Q.4	(a)	Write short note on environmentally sensitive polymers?	03
	(b)	Describe Phase Transformation	04
	(c)	Discuss patterning monolayers?	07
Q.5	(a)	Discuss self-assembled block copolymer nanostructures?	03
	(b)	Briefly describe interaction between cationic surfactants and anionic silicates?	04
	(c)	Write applications of SAMS	07
		OR	
Q.5	(a)	What is templet assisted self-assembly? Explain in brief.	03
	(b)	Write a note on structure of colloidal and their uses	04
	(c)	Write a note on limitations of self-assembly process.	07