Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– V (New) EXAMINATION – WINTER 2019

Subject Code: 2153901 **Date: 25/11/2019**

Subject Name: Fabrication of Nano- devices

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 Core-Shell Structure.	**03**
	(b)	Describe Atom Lithography.	**04**
	(c)	Define Quantum Structures. Explain Its Size and Dimensionality Effect.	**07**
Q.2	**(a)**	Define Gas Sensor.	**03**
	(b)	Describe Graphene and Fullerene.	**04**
	(c)	Define Photonic Crystal and explain Photonic band Gap devices with Application.	**07**
		OR	
	(c)	Describe Protein-Based Biosensor	**07**
Q.3	**(a)**	Explain Lithography. Mention Different types of Lithography.	**03**
	(b)	Explain Different type of Gas Sensor Briefly.	**04**
	(c)	Explain X-ray Lithography with Appropriate Diagram.	**07**
		OR	
Q.3	**(a)**	Describe Schottky Diodes and Schottky Barriers.	**03**
	(b)	Define DNA Based Biosensor.	**04**
	(c)	Write down full form of MOSFET, explain it briefly with Types(Diagram)	**07**
Q.4	**(a)**	Explain the Concept of Photochemical Molecular Devices.	**03**
	(b)	Define Nanorods, Nanowire, Nanofibres and Nanotubes.	**04**
	(c)	What are Nanocomputers? Explain its Fabrication Methods and Types.	**07**
		OR	
Q.4	**(a)**	Define Antibody and Antigens.	**03**
	(b)	Describe Application by Function of Gas Sensors.	**04**
	(c)	Explain the Concept of Single Electron Tunneling.	**07**
Q.5	**(a)**	Mention Any Five Single Electron Devices.	**03**
	(b)	Describe Optical Fibers for Nanodevices.	**04**
	(c)	Define Resonant Tunneling and hence explain Resonant tunneling Diode, Resonant Tunneling Transistor.	**07**
		OR	
Q.5	**(a)**	Explain Nano Robotics and Nano Manipulation.	**03**
	(b)	Define Carbon Nanotube based Logic Gates.	**04**
	(c)	Write a short note on Ion Lithography.	**07**

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