

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– VI (New) EXAMINATION – WINTER 2019****Subject Code: 2163905****Date: 12/12/2019****Subject Name: Microelectronics and VLSI****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
<b>Q.1</b>	(a) Discuss types of logic gates.	<b>03</b>
	(b) Convert binary number $(1000101)_2$ into its equivalent octal, hexadecimal and decimal number.	<b>04</b>
	(c) Explain photovoltaic cell.	<b>07</b>
<b>Q.2</b>	(a) State De Morgan's theorem.	<b>03</b>
	(b) Write applications of LED.	<b>04</b>
	(c) Explain J-K Flip-flop in details.	<b>07</b>
	<b>OR</b>	
	(c) Explain S-R Flip-flop in details.	<b>07</b>
<b>Q.3</b>	(a) Explain Moore's law.	<b>03</b>
	(b) Explain IC fabrication.	<b>04</b>
	(c) Discuss tunnel diode in detail.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) What is FET?	<b>03</b>
	(b) Write difference between Combinational and Sequential circuits.	<b>04</b>
	(c) Discuss PN junction diode in detail.	<b>07</b>
<b>Q.4</b>	(a) What is MEMS?	<b>03</b>
	(b) Discuss NAND gate as universal gate.	<b>04</b>
	(c) Explain CMOS transistor.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) What is micro fluidics device?	<b>03</b>
	(b) Discuss NOR gate as universal gate.	<b>04</b>
	(c) Explain BJT transistor.	<b>07</b>
<b>Q.5</b>	(a) Describe IC classification in short.	<b>03</b>
	(b) Describe Random Access Memory (RAM).	<b>04</b>
	(c) Explain Synchronous Counter in detail.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Discuss device scaling.	<b>03</b>
	(b) Describe Read Only Memory.	<b>04</b>
	(c) Explain Asynchronous Counter in detail.	<b>07</b>

\*\*\*\*\*