



GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:2163905

Date:08/05/2018

Subject Name:Microelectronics and VLSI

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) What is NPN and PNP transistor?	03
	(b) Convert binary number $(1100100)_2$ into its equivalent octal, hexadecimal and decimal number.	04
	(c) Explain De Morgan's theorem.	07
Q.2	(a) What is FET? Explain the characteristics of it.	03
	(b) Describe S-R flip flop in details.	04
	(c) Which gates are called as universal gates? Design all basic gates using universal gates.	07
	OR	
	(c) Write a short note on MEMS devices.	07
Q.3	(a) Write various application of PN junction diode .	03
	(b) Write a short note on Light Emitting Diode.	04
	(c) Explain CMOS transistor in details.	07
	OR	
Q.3	(a) Describe combinational circuits.	03
	(b) Explain Moore's law.	04
	(c) What is transistor? Explain bipolar transistor characteristics in detail.	07
Q.4	(a) Give difference between synchronous and asynchronous counters.	03
	(b) Describe principle and operation of Photovoltaic cell.	04
	(c) Explain J-K Flip-flop in details.	07
	OR	
Q.4	(a) Give difference between NMOS and PMOS.	03
	(b) What is micro fabrication technique? Explain it with application.	04
	(c) Write a short note on RAM.	07
Q.5	(a) Explain different configuration of the BJT transistor.	03
	(b) What is opto coupler device and explain with suitable example.	04
	(c) Describe various types of IC and Explain the fabrication of IC.	07
	OR	
Q.5	(a) What is micro fluidics device? What are the uses of it.	03
	(b) List out different types of diode. Also explain tunnel and varactor diode.	04
	(c) Explain different types of fabrication technique for the PN junction diode	07
