

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– III (New) EXAMINATION – WINTER 2019****Subject Code: 3130907****Date: 30/11/2019****Subject Name: Analog & Digital Electronics****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	
Q.1	(a) What is ideal differential amplifier?	03	
	(b) Design half adder circuit.	04	
	(c) Compare different types of power amplifiers.	07	
Q.2	(a) Calculate maximum frequency for a sine wave, output voltage of 12 V peak with an OPAMP having slew rate 1 V/ μ S.	03	
	(b) Prove that voltage follower has unity gain.	04	
	(c) Draw integrator circuit with example of input and output waveforms. Derive expression for output voltage.	07	
OR			
Q.3	(c) Write short note on Wien bridge oscillator using OPAMP.	07	
	(a) Explain zero crossing detector.	03	
	(b) Explain how to generate triangular wave using OPAMP.	04	
Q.3	(c) Explain first order Butterworth low-pass filter. Derive expression of filter gain.	07	
	OR		
	Q.3	(a) Explain window comparator.	03
(b) Draw Schmitt trigger circuit. Plot input and output waveforms.		04	
(c) Explain positive peak detector circuit using OPAMP.		07	
Q.4	(a) What is multiplexer?	03	
	(b) Classify digital logic gates. Draw truth table and symbols of basic logic gates.	04	
	(c) Design a combinational circuit which has 3 bit binary input and has output as square of inputs.	07	
OR			
Q.4	(a) Design full adder circuit.	03	
	(b) Describe POS and SOP with example.	04	
	(c) Explain in detail 7 segment LED display.	07	
Q.5	(a) Explain digital to analog converter with binary weighted resistors.	03	
	(b) Explain positive edge triggered JK flip-flop.	04	
	(c) Explain 4 bit ring counter using waveforms.	07	
OR			
Q.5	(a) What are preset and clear inputs with flip-flops? Why are they provided?	03	
	(b) Explain master slave JK flop-flop.	04	
	(c) Design a 4 bit synchronous up counter.	07	
