Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 130902 **Date: 23-12-2014**

Subject Name: Analog and Digital Electronics

Time: 02.30 pm - 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.**

Q.1	**(a)**	What are ideal characteristics of operational amplifier?	**07**
	(b)	Explain block diagram of op-amp. Explain function of each block.	**07**
Q.2	**(a)**	Explain inverting, noninverting and differential amplifier using op-amp under open loop condition.	**07**
	(b)	Derive equation of gain for voltage series feed-back for op-amp.	**07**
		OR	
	(b)	Draw pin diagram of op-amp. Explain function of each pin. Explain different packages are used for op-amp IC.	**07**
Q.3	**(a)**	Explain application of op-amp as integrator and differentiator.	**07**
	(b)	What is the importance of slew rate and output offset voltage in operation of op-amp?	**07**
		OR	
Q.3	**(a)**	What are demerits of open loop configuration of op-amp? How can we overcome this?	**07**
	(b)	Explain differential amplifier using three op-amp. Derive its gain equitation.	**07**
Q.4	**(a)**	Why NAND gate and NOR gate is known as universal gate? Obtain AND and OR gate using NAND and NOR gate.	**07**
	(b)	Explain working of IC 555 as astable multivibrator.	**07**
		OR	
Q.4	**(a)**	Explain pin diagram of IC 555. Explain function of each pin.	**07**
	(b)	Explain half adder and full adder circuit.	**07**
Q.5	**(a)**	Explain R-S flip-flop using truth table.	**07**
	(b)	Explain role of multiplexer and demultiplexer in digital electronics. Explain with diagram.	**07**
		OR	
Q.5	**(a)**	How can be obtained 1's and 2's compliment of binary number?	**07**
	(b)	Explain working of counter and register.	**07**

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