Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEMESTER 1st / 2nd (NEW) EXAMINATION WINTER 2016

Subject Code: 2110016 **Date:25/01/2017**

Subject Name: Basic Electronics

Time:10:30 AM TO 1:00 PM **Total Marks: 70**

Instructions:

1. **Question No. 1 is compulsory. Attempt any four out of remaining Six questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1		**Objective Question (MCQ)**	
	(a)	Choose an appropriate option from the following:	**07**
	1.	In an Electrical system, the flow of current follows: (a) De Morgan's law (b) Boyle's law (c)Curie's law (d) Ohm's law	
	2.	The equivalent octal of the binary number $(101010101011)_2$ is (a) $(5352)_8$ (b) $(2523)_8$ (c) $(5253)_8$ (d) $(225253)_8$	
	3.	X(t)= - X(t) is the property of (a) Even signal (b) Odd signal (c)Periodic signal(d) Aperiodic signal	
	4.	If a 1 Hz square signal is given to a bulb, how long will it glow? (a) 1second (b) 2 second (c) 0.5 second (d) 0 second	
	5.	The inductance offered by a inductor of 1 H to a DC signal is (a) 0 (b) infinity (c) 1 (d) indeterminate	
	6.	Following gates are known as Universal Logic Gates (a) AND, OR (b) NAND, NOR (c) AND, NOR (d) NAND,OR	
	7.	A circuit that converts AC signal to DC signal is known as a (a) Rectifier circuit (b) Inverter circuit (c) RL circuit (d) RC circuit	
	(b)	Choose an appropriate option from the following:	**07**
	1.	The IC 741 Operational Amplifier cannot: (a) Add signals (b) Subtract signals (c) Transform signal (d) Differentiate signal	
	2.	A Flip Flop has got a memory of (a) 1 bit (b) 2 bit (c) 4 bit (d) 8 bit	
	3.	An operational amplifier IC 741 has got (a) 2 inputs, 1 outputs (b) 1 inputs, 2 outputs (c) 1 input 1 output (d)2 inputs, 2 outputs	
	4.	Wireless mobile cells are _____ in shape (a) pentagon (b) hexagon (c) circular (d) square	
	5.	A system is linear if _____ is true. (a) KVL (b) KCL (c) Superposition theorem (d) Ohm's law	
	6.	PAM stands for (a) Pulse And Modulation (b) Pulse Analog Modulation (c) Pulse Altitude Modulation (d) Pulse Amplitude Modulation	
	7.	A control system with feedback has (a) maximum error (b) minimum error(c)zero error (d) infinite error	
Q.2	**(a)**	Define Resistor. Quote all the characteristics of any resistor. If you go to the market to purchase a resistor, apart from resistance what else will you quote so that the safety is ensured?	**03**
	(b)	How does a Voltmeter differ from an Ammeter?	**04**
	(c)	What is Superposition Theorem? Prove the same for a network.	**07**
Q.3	**(a)**	Draw an inverting amplifier and write the equation for its gain.	**03**
	(b)	Show a Low Pass Filter. Define the higher frequency cutoff.	**04**
	(c)	Explain the working of a band pass filter. Find out its bandwidth.	**07**

Q.4	**(a)**	Assign a binary code to all the 52 playing cards. Use minimum number of bits.	**03**
	(b)	State and Prove De Morgan's laws.	**04**
	(c)	Design an Op-amp based circuit that does the following $V_O=V_1-2*V_2$.	**07**
Q.5	**(a)**	Draw an SR Flip Flop. Plot its truth table and Symbol.	**03**
	(b)	Draw the block diagram of a multiplexer circuit and label the pins.	**04**
	(c)	How does a PAM signal differ from a PWM, PPM signal?	**07**
Q.6	**(a)**	Draw the ISO- 7 layer block diagram for Computer Network	**03**
	(b)	Define Antenna, Waveguide, Transmission Lines and Flux density.	**04**
	(c)	Draw the block diagram of a Communication system. Explain each block.	**07**
Q.7	**(a)**	Define a control system. Classify them and state their advantages.	**03**
	(b)	Explain Frequency Reuse in Cellular Communication	**04**
	(c)	Discuss the types of Computer Networks.	**07**

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