Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER 1st / 2nd EXAMINATION (NEW SYLLABUS) – SUMMER - 2017

Subject Code: 2110016   **Date:02/06/2017**

Subject Name: Basic Electronics

Time: 2:30 PM to 05:00 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.**

Q.1   **Objective Question (MCQ)**   **Mark**

(a)   **07**

1. The superposition theorem is applicable to
  (a) linear, non-linear and time variant responses
  (b) linear and non-linear resistors only
  (c) linear responses only
  (d) none of the above

2. Octal number 12 is equal to decimal number
  (a) 8   (b) 9   (c) 10   (11) 11

3. Karnaugh map cannot be drawn when the number of variables is more than 4.
  (a) True   (b) False

4. If all the LEDs in a seven segment display are turned on, the number displayed is
  (a) 1   (b) 3   (c) 0   (d) 8

5. The number of cells in a 4 variable K map is
  (a) 16   (b) 8   (c) 4   (d) 32

6. $\delta(t)$ is a
  (a) energy signal
  (b) power signal
  (c) neither energy nor power
  (d) none

7. _____ is called volatile memory.
  (a) ROM   (b) RAM

(b)   **07**

1. An op-amp has very _____.
  (a) high voltage gain
  (b) high input impedance
  (c) low output impedance
  (d) all of the above

2. Which is a typical application of digital signal processing?
  (a) Noise elimination
  (b) Music signal processing
  (c) Image processing
  (d) All of the above

3. A woofer should be fed from the input through a
  (a) low pass filter
  (b) high pass filter
  (c) band pass filter
  (d) band stop filter

4. A carrier wave carries information.
   (a) True   (b) False

5. Which of the following system has feedback network?
   (a) Open loop   (b) Closed loop

6. In satellite communication, frequency modulation is used because satellite channel has
   (a) small bandwidth and negligible noise
   (b) large bandwidth and severe noise
   (c) maximum bandwidth and minimum noise
   (d) high modulation index

7. Which of the following is even signal?
   (a) Cos   (b) Sin   (c) Signum   (d) None of the above

Q.2	**(a)**	Write down the superposition theorem.	03
	(b)	State and explain Thevenin's theorem.	04
	(c)	Explain Kirchhoff's Voltage law with suitable example.	07
Q.3	**(a)**	Explain universal gates in detail.	03
	(b)	Explain full adder circuit.	04
	(c)	Give different types of flip fops. Explain any one flip flop in detail.	07
Q.4	**(a)**	Explain current to voltage convertor.	03
	(b)	Explain CMRR property of operational amplifier.	04
	(c)	Explain the inverting amplifier application of operational amplifier.	07
Q.5	**(a)**	Explain single sideband amplitude modulation (SSBAM).	03
	(b)	Define: (1) Propagation mode (2) Cutoff frequency	04
	(c)	Draw and explain Block diagram of a super heterodyne FM radio receiver.	07
Q.6	**(a)**	Draw the block diagram of typical digital control system.	03
	(b)	Give the classification of feedback control system.	04
	(c)	Draw and explain functional block diagram of a signal processing system.	07
Q.7	**(a)**	Briefly explain Transformer.	03
	(b)	Explain how the wheatston bridge can find the unknown resistance?	04
	(c)	Explain four bit serial in serial out shift register with block diagram and timing diagram.	07

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