

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER- I & II (NEW) EXAMINATION – WINTER 2019****Subject Code: 2110016****Date: 06/01/2020****Subject Name: Basic Electronics****Time: 10:30 AM TO 01:00 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.

| <b>Q.1</b> | <b>Objective Question (MCQ)</b>  | <b>Mark</b> |
|------------|--|-------------|
| <b>(a)</b> |  | <b>07</b>   |
| 1.         | Which are the logic gates known as a Universal Gates?<br>(a) XOR, AND, (b) AND, OR, (c) NAND, NOR, (d) XNOR, OR  |             |
| 2.         | In most of modern IC op-amps, the 741 requires _____ power supplies<br>(a) 1 (b) 2 (c) 3 (d) 4   |             |
| 3.         | PAM stands for<br>(a) Pulse And Modulation (b) Pulse Analog Modulation<br>(c) Pulse Altitude Modulation (d) Pulse Amplitude Modulation                           |             |
| 4.         | Which is a typical application of digital signal processing? '<br>(a) Noise elimination (b) Music signal processing<br>(c) Image processing (d) All of the above |             |
| 5.         | The first cellular systems were _____.<br>(a) Analog (b) Digital (c) Hybrid (d) None of Above  |             |
| 6.         | Conductance is expressed in terms of<br>(a) ohm / m (b) m / ohm (c) mho / m (d) mho.   |             |
| 7.         | A system is linear if _____ is true.<br>(a) KVL (b) KCL (c) Superposition theorem (d) Ohm's law  |             |
| <b>(b)</b> |  | <b>07</b>   |
| 1.         | Wireless mobile cells are _____ in shape<br>(a) pentagon (b) hexagon (c) circular (d) square   |             |
| 2.         | Which of the following system has feedback network?<br>(a) Open loop (b) Closed loop   |             |
| 3.         | Out of following signals _____ is an even signal.<br>(a) Cosine wave (b) Sine wave<br>(c) Triangle wave (d) None of the above.                                   |             |
| 4.         | A Flip Flop has got a memory of<br>(a) 1 bit (b) 2 bit (c) 4 bit (d) 8 bit   |             |
| 5.         | In an Electrical system, the flow of current follows:<br>(a) De Morgan's law (b) Boyle's law (c) Curie's law (d) Ohm's law                                       |             |
| 6.         | A radio station transmitting AM wave with 1 MHz frequency band having a wavelength of _____.<br>(a) 3 meter, (b) 300 meter, (c) 0.3 meter, (d) 30 meter          |             |
| 7.         | A circuit designed to increase the level of its input signal is called:<br>(a) an amplifier (b) a modulator (c) an oscillator (d) a receiver                     |             |

- Q.2** (a) Draw the various rules to reduce/modification of Block Diagram system. **03**  
(b) Write a short note on ammeter and voltmeter. **04**  
(c) Explain Kirchhoff's Voltage law with suitable example. **07**
- Q.3** (a) Give the classification of electric network. **03**  
(b) State and explain Thevenin's theorem. **04**  
(c) Explain Node and Mesh Analysis with Controlled Sources., with example. **07**
- Q.4** (a) Explain current to voltage convertor. **03**  
(b) Compare open loop and closed loop system. **04**  
(c) Explain ideal characteristics of ideal Op-Amp in detail. **07**
- Q.5** (a) State and prove De-Morgan's theorems. **03**  
(b) Classify network topologies and draw each one of them. **04**  
(c) Give different types of flip flops. Explain any one of flip flop in detail. **07**
- Q.6** (a) Draw only functional block diagram of signal processing system. **03**  
(b) What do you understand about multiplexing? Explain any one of the multiplexing technique. **04**  
(c) Explain in detail pulse modulation with necessary diagrams. **07**
- Q.7** (a) Define waveguide, transmission lines and antenna. **03**  
(b) Classify the standard on 2G and 3G. **04**  
(c) Draw and explain the block diagram of superheterodyne AM radio receiver. **07**

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