Seat No.: _____                                    Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY
## BE - SEMESTER–I &II (NEW) EXAMINATION – SUMMER-2019

**Subject Code: 3110016**                                    **Date: 07/06/2019**

**Subject Name: Basic Electronics**

**Time: 10:30 AM TO 01:00 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)** | Differentiate between insulator, conductor and semiconductor                                        | **03** |
|     | **(b)** | Explain forward bias PN junction diode with diagram                                                 | **04** |
|     | **(c)** | Explain full wave bridge rectifier with neat diagram                                                | **07** |
| **Q.2** | **(a)** | Explain LED diode                                                                                   | **03** |
|     | **(b)** | State different types of diodes. Describe process of testing diode with multi meter.                | **04** |
|     | **(c)** | What is break down diode?? Explain working of zener break down and avalanche break down             | **07** |

**OR**

|     |     |                                                                                                         |       |
|-----|-----|---------------------------------------------------------------------------------------------------------|-------|
|     | **(c)** | Why biasing is important in transistor? Explain voltage divider bias with diagram.                  | **07** |
| **Q.3** | **(a)** | What is use of coupling and bypass capacitor?                                                       | **03** |
|     | **(b)** | Explain PIN photo diode                                                                             | **04** |
|     | **(c)** | Draw the circuit of transistor in CE configuration. Sketch the output characteristics and explain active, saturation and cutoff regions | **07** |

**OR**

|     |     |                                                                                                         |       |
|-----|-----|---------------------------------------------------------------------------------------------------------|-------|
| **Q.3** | **(a)** | What is varactor diode? How capacitance of a diode varies with reverse voltage?                     | **03** |
|     | **(b)** | Explain AC loadline with respect to BJT                                                             | **04** |
|     | **(c)** | Compare CE, CB and CC configuration with respect to different transistor characteristics            | **07** |
| **Q.4** | **(a)** | What is FET? State important features of FET.                                                       | **03** |
|     | **(b)** | Compare BJT and FET                                                                                 | **04** |
|     | **(c)** | Write short note on MOSFET.                                                                         | **07** |

**OR**

|     |     |                                                                                                         |       |
|-----|-----|---------------------------------------------------------------------------------------------------------|-------|
| **Q.4** | **(a)** | Explain clipping circuit                                                                            | **03** |
|     | **(b)** | Explain (i) Unipolar device (ii) Transconductance                                                  | **04** |
|     | **(c)** | Write shortnote on JFET                                                                             | **07** |
| **Q.5** | **(a)** | Draw the symbol of NPN and PNP transistor. What is use of transistor?                               | **03** |
|     | **(b)** | Among TTL and CMOS digital logic family which one is better and why?                                | **04** |
|     | **(c)** | Draw symbol and explain truth table of all basic logic gates                                        | **07** |

**OR**

|     |     |                                                                                                         |       |
|-----|-----|---------------------------------------------------------------------------------------------------------|-------|
| **Q.5** | **(a)** | State advantage of transistor                                                                      | **03** |
|     | **(b)** | Explain (i)universal gate (ii) EX-OR logic gate                                                    | **04** |
|     | **(c)** | Give comparison between different types of digital logic families                                   | **07** |

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