Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**PDDC– SEMESTER III– • EXAMINATION –WINTER- 2016**

**Subject Code: X30902** **Date:02/01/2017**

**Subject Name: Analog & Digital Electronics**

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

**Instructions:**

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

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|---|---|---|---|
| **Q.1** | **(a)** | Enlist Characteristics of ideal Op-Amp. | **07** |
| | **(b)** | Define Following<br>(1)Slew Rate (2) Input offset voltage (3) Input bias current.<br>(4) Open loop voltage gain.(5) CMRR (6) PSRR (7) Input offset current | **07** |
| **Q.2** | **(a)** | Explain Op-Amp as a Comparator. | **07** |
| | **(b)** | Explain 555 timers as an Astable Multivibrator with necessary Equations. | **07** |
| | | **OR** | |
| | **(b)** | Explain 555 timers as an Monostable Multivibrator with necessary Equations. | **07** |
| **Q.3** | **(a)** | Enlist Truth Tables of All Logic Gates. | **07** |
| | **(b)** | Convert following into binary number<br>(1)$(85.63)_{10}$ (2) $(436)_8$ | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Explain Importance of K-map With Example. | **07** |
| | **(b)** | Convert following number into gray code<br>(1)$(1011)_2$ (2) $(46)_{10}$ | **07** |
| **Q.4** | **(a)** | Compare Performance Characteristic of Digital Logic Families. | **07** |
| | **(b)** | Minimize the following Boolean expression using K-map and realize it using the basic gates<br>Y=Ɛm(1,3,5,9,11,13) | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Why NOR and NAND gates are known as universal gate? Make OR and AND gate using NOR and NAND gates. | **07** |
| | **(b)** | Minimize the following Boolean expression using K-map and realize it using the basic gates<br>Y=Ɛm(1,2,9,10,11,14,15) | **07** |
| **Q.5** | **(a)** | Describe J-K flip flop. How J-K flip-flop differ from S-R flip-flop? | **07** |
| | **(b)** | Classify counters and explain One of them. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Compare D-Flip Flop with T-Flip Flop. | **07** |
| | **(b)** | Classify registers and explain One of them. | **07** |

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