Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**ME - SEMESTER–I(New course)• EXAMINATION – WINTER- 2015**

**Subject Code: 2710311** **Date: 01/01/2016**

**Subject Name: Embedded system for Instrumentation**

**Time:2:30 pm to 5:00 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)** | Discuss the features of ARM Cortex ï M3/M4 processors in brief. | **07** |
| | **(b)** | Write an assembly program for counting number of leading zero in a given number. | **07** |
| **Q.2** | **(a)** | Explain how interrupts are handled by cortex M processors. | **07** |
| | **(b)** | Write an assembly program from reading different number from memory location and combine them in other memory location using LSL-LSR instruction. | **07** |
| | | **OR** | |
| | **(b)** | Write an assembly program for Divide without using DIV instruction. | **07** |
| **Q.3** | **(a)** | Draw and explain basic memory map of Cortex M3/M4 processor. Also give address ranges. | **07** |
| | **(b)** | Write an assembly program to insert group of Bits of one register into another register at specified position. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Explain the floating point with its registers in detail. | **07** |
| | **(b)** | Write an assembly program for counting numbers of positive no. in a set of array. | **07** |
| **Q.4** | **(a)** | Write a C program to produce Saw Tooth wave using DAC. | **10** |
| | **(b)** | Explain Bit-band operations and its advantages | **04** |
| **Q.4** | **(a)** | Explain various types of shift and rotate instructions with a neat sketch. | **07** |
| | **(b)** | What is lazy stacking? Enlist the different scenario for the same and explain any two along with the key element | **07** |
| **Q.5** | **(a)** | Write an assembly program for counting no. of negative number in a given set of Array. | **07** |
| | **(b)** | Write an assembly program for finding 1ôs compliment of a number | **07** |
| **Q.5** | **(a)** | Write an assembly program to multiply a 64 bit multiplicand with 32 bit multiplier. | **07** |
| | **(b)** | Write a C program for Toggle a LED when a push button press. | **07** |

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