Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014**

**Subject code: 1720107 Date: 23-06-2014**

**Subject Name: Embedded System**

**Time: 02:30 pm - 05:00 pm Total Marks: 70**

## Instructions:

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

| | | | |
|---|---|---|---|
| **Q.1** | **(a)** | Explain principle of stepper motor controllers | **07** |
| | **(b)** | Discuss the advantages and disadvantages of using memory mapped I/O versus standard I/O. | **07** |
| **Q.2** | **(a)** | Discuss functional specification of a digital camera | **07** |
| | (b) | Compose 1K x 8 ROMs into a 2K x 16 ROM | **07** |
| | | OR | |
| | (b) | Discuss microcontroller and ccdpp/fixed point dct | **07** |
| **Q.3** | | Design a 3-bit counter that counts the sequence 1,2,3,4,5,7,1,2, etc. This counter has an output ―odd‖ whose value is 1 when the current count value is odd. Use the sequential design . Start from a state diagram, draw the state table, minimize the logic and draw the final circuit. | **14** |
| | | **OR** | |
| **Q.3** | | Design a BCD counter which increments every one-second starting from 00 up to 99. When it reaches 99 it should stop. Use timer in the interrupt mode to generate one-second delay. Measure actual time elapsed. | **14** |
| **Q.4** | **(a)** | Given a 120 ï step stepper motor with its own controller. Write a C function rotate which given the desired rotation amount in degrees pulses a microcontroller‘s output port the correct number of times to achieve the desired rotation. | **07** |
| | **(b)** | Illustrate how to use a 1K x 8 ROM to implement a 512 x 6 ROM | **07** |
| | | **OR** | |
| **Q.4** | **(b)** | Explain ISA bus protocol for memory access | **07** |
| **Q.5** | **(a)** | Explain in detail about UART single ï purpose processor as an FSMD | **07** |
| | **(b)** | Write a C program to count and show it on the LCD display. 0 to 9999 BCD counter | **07** |
| | | **OR** | |
| | **(b)** | Write a C program to make a walking one segment from Segment 0 to segment 15. | **07** |

**********