Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–V • EXAMINATION – SUMMER 2016

Subject Code: 650012 Date: 13/05/2016

Subject Name: Software Development for Embedded Systems

Time: 10:30 AM to 01:00 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 the following terms **07**

1. Data Path
2. Design Gap
3. DMA
4. VLSI
5. Mythical Man-Month
6. nMOS Transistor
7. Timer

(b) What is an embedded system? Explain the characteristics of embedded systems. **07**

Q.2 **(a)** List and define the three main IC technologies. What are the benefits of using each of the three different IC technologies? **07**

(b) What is a "renaissance engineer," and why is it so important in the current market? **07**

OR

(b) The design of a particular disk drive has an NRE cost of $100,000 and a unit cost of $20. How much will we have to add to the cost of each product to cover our NRE cost, assuming we sell: (a) 100 units, and (b) 10,000 units? **07**

Q.3 **(a)** Explain the General Purpose Processor. Describe why a general-purpose processor could cost less than a single-purpose processor you design yourself. **07**

(b) List and define the three main design technologies. How are each of the three different design technologies helpful to designers? **07**

OR

Q.3 **(a)** Describe fully associative and two way set associative cache mapping techniques. **07**

(b) Define the following terms: finite-state machines, concurrent processes, real-time systems, and real-time operating system. **07**

Q.4 **(a)** List the three main transmission mediums described in the chapter. Give two common applications for each. **07**

(b) Compose 1Kx 8 ROMs into a 1K× 32 ROM (Note: 1K actually means 1,024 words). **07**

OR

Q.4 **(a)** Explain the difference between port-based I/O and bus-based I/O. **07**

(b) Four lights are connected to a decoder. Build a circuit that will blink the lights in the following order: 0, 2, 1, 3, 0, 2, ... Start from a state diagram, draw the state table, minimize the logic, and draw the final circuit. **07**

Q.5 **(a)** Explain Digital Camera design using microcontroller and CCDPP. **07**

(b) List different laboratory tool for testing embedded system. Explain one in details **07**

OR

Q.5 **(a)** Describe Linker/Locators for embedded system. **07**

(b) What is Instruction set simulator? What are the abilities and shortcoming of simulators? **07**

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