

**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 1Kx 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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