Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–V • EXAMINATION – WINTER 2015

Subject Code:2650012 Date:10/12/2015

Subject Name: Software Development for Embedded Systems

Time:10.30 am to 01.00 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 the following terms **07**

1. Design Metric
2. Market Window
3. NRE Cost
4. Design Gap
5. UART
6. IrDA
7. Watchdog timer

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

Q.2 **(a)** List and define the three main characteristics of embedded systems that distinguish such systems from other computing systems. **07**

(b) List and define the three main processor technologies. What are the benefits of using each of the three different processor technologies? **07**

OR

(b) Using the revenue model compute the percentage revenue loss if $D = 5$ and $W = 10$. If the company whose product entered the market on time earned total revenue of $25 million, how much revenue did the company that entered the market 5 months late lose? **07**

Q.3 **(a)** Briefly define each of the following: mask-programmed EPROM, EEPROM, flash EEPROM, SRAM, DRAM, PSRAM, and NVRAM. **07**

(b) Design a 3×8 decoder. Start from a truth table, use K-maps to minimize logic and draw the final circuit. **07**

OR

Q.3 **(a)** Sketch the internal design of a 4 × 3 RAM. **07**

(b) Explain the Cache and cache mapping techniques. **07**

Q.4 **(a)** Short note on DMA for Microprocessor interfacing **07**

(b) Show how to use a 1K× 8 ROM to implement a 512 × 6 ROM. **07**

OR

Q.4 **(a)** Discuss the advantages and disadvantages of using memory-mapped I/O versus standard I/O. **07**

(b) Design a 2-bit comparator (compares two 2-bit words) with a single output "less-than," using the combinational design technique described in the chapter. Start from a truth table, use K-maps to minimize logic, and draw the final circuit. **07**

Q.5 **(a)** Explain Requirement Specification for Digital Camera also draw the block diagram for digital Camera **07**

	(b)	Give some reasons for doing actual programming work for embedded systems on a Host system rather than on a target system. Explain Cross-Compiler, Cross-assembles, Linker/Locators for Embedded software.	**07**

OR

Q.5	**(a)**	Discuss DBGMAIN.C and DISPLAY.C Modules for Tank Monitoring System.	**07**
	(b)	Write short note on tool chain for building embedded software.	**07**

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