Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–V • EXAMINATION – WINTER • 2014

Subject Code: 650012 **Date: 08-12-2014**

Subject Name: Software Development for Embedded Systems

Time: 10:30 am - 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)
1. What is a "market window" and why is it so important for products to reach the market early in this window? **03**
2. What are the different optimizing design metrics involved in designing an embedded system? How are they competing with one another? **04**

(b) What do you mean by integrated chip (IC)? What do you mean by IC technology? In this context briefly explain and exemplify the different design styles involved in IC design technology. **07**

Q.2 (a) With the help of neat diagram, describe different RT-Level Combinational components of embedded system. **07**

(b) Explain in brief about Application Specific Instruction-Set Processors (ASIPs). **07**

OR

(b) Write an efficient algorithm for finding the GCD of two integer numbers. Also explain how the FSMD for this can be optimized. **07**

Q.3 (a) Describe the working of a PWM unit with a circuit and waveforms. **07**

(b) Explain basic DRAM architecture. Describe Fast Page Mode DRAM. **07**

OR

Q.3 (a) Explain the working of stepper motor using a driver. **07**

(b) What is memory hierarchy? How does the cache operate? Discuss the cache mapping techniques. **07**

Q.4 (a) Explain different arbitration methods. **07**

(b) Explain DBGMAIN, LEVELS and OVERFLOW module of Tank Monitoring System. **07**

OR

Q.4 (a) Describe any three serial communication protocols. **07**

(b) Discuss design of digital camera using 8051 Microcontroller, CCD Preprocessor and **07**

1. Fixed-Point DCT to reduce DCT computation
2. DCT to reduce DCT computation

Compare both techniques based on design metrics.

Q.5 (a) Explain linker/locators for Embedded Software. **07**

(b) List different Laboratory tools to test software. Explain Software-Only Monitors. **07**

OR

Q.5 (a) Describe different methods of getting embedded software into the target system. **07**

(b) What is Instruction Set Simulator? Explain useful abilities of Simulators. **07**

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