Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–V • EXAMINATION – SUMMER • 2015

Subject Code: 650012 Date: 11-05-2015

Subject Name: Software Development for Embedded Systems

Time: 02:30 pm to 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)** Describe following terms: **07**

1. Technology
2. Embedded System
3. Renaissance Engineer
4. General Purpose Processor
5. Give Full Form: PSRAM, ISA
6. HM6264 and 27C256
7. Zero-bias Adjust

(b) Describe following Design Metrics: **07**

1. NRE Cost
2. Time-to-market
3. Time-to-prototype
4. Correctness
5. Maintainability
6. Flexibility
7. Safety

Q.2 **(a)** Explain Single-Purpose Processors and Application Specific Processors. **07**

(b) Write note on optimizing custom Single-Purpose Processors. **07**

OR

(b) Design a coffee machine controller, given that a coffee costs 75 cents and your machine accepts quarters only. Draw a black-box view, come up with a state diagram and state table, minimize the logic, and then draw the final circuit. **07**

Q.3 **(a)** Explain Datapath, Control Unit, and two memory architectures of General-Purpose Processor. **07**

(b) List Standard Single-Purpose Processors. Explain UART. **07**

OR

Q.3 **(a)** Describe direct, fully associative and set-associative Cache mapping techniques. **07**

(b) Draw internal view and external block diagram for 8 x 4 RAM and ROM. **07**

Q.4 **(a)** Explain following:

1. Port and Bus-Based I/O **04**
2. Memory-Mapped I/O and Standard I/O **03**

(b) Write note of priority arbiter, daisy-chain arbitration and network-oriented arbitration methods. **07**

OR

Q.4 **(a)** Explain following:

1. I^2C **03**
2. PCI Bus **02**
3. IrDA **02**

(b) Draw functional block-diagram specification of a digital camera and explain it. Also draw block-diagram of the executable model of the digital camera. **07**

Q.5	**(a)**	Explain PROM Programmers, ROM Emulators and Flash for getting Embedded Software into the Target System.	**07**
	(b)	Define Simulators? Discuss various useful abilities for Simulators.	**07**

OR

Q.5	**(a)**	Define Cross-Compiler, Cross-Assembler. Explain Linker/Locators for Embedded Software.	**07**
	(b)	Discuss OVERFLOW.C, LEVELS.C and DBGMAIN.C modules for Tank Monitoring System.	**07**

****