

**GUJARAT TECHNOLOGICAL UNIVERSITY****MCA SEM-V Examination- Dec.-2011****Subject code: 650012****Date: 21/12/2011****Subject Name: Software Development in Embedded Systems (SD-ES)****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 embedded system? Give example. **02**  
 2. What is design metric? Give name of commonly used design metrics. **02**  
 3. Build a 2-input NOR gate using a minimum number of CMOS transistors. **02**  
 4. What is assert macro? **01**
- (b) 1. Describe why a general-purpose processor could cost less than a single-purpose processor you design yourself. **02**  
 2. Compose 1k x 8 ROMs into 2k x 16 ROMs. **02**  
 3. What is daisy-chain arbitration? **03**
- Q.2** (a) Explain different IC technologies. **07**  
 (b) Write short note on RT-Level Combinational Components. **07**
- OR**
- (b) Design single-purpose processor to find Greatest Common Divisor of given two numbers. **07**
- Q.3** (a) Explain in brief about Application Specific Instruction-Set Processors (ASIP). **07**  
 (b) What is watchdog timer? Why it is so called? Explain its role in the design of any embedded system. **07**
- OR**
- Q.3** (a) List different laboratory tools for testing embedded system. Explain software-only monitors in detail. **07**  
 (b) Describe the working of a PWM with waveforms and example. **07**
- Q.4** (a) What is memory hierarchy? How does the cache operate? Discuss the cache mapping techniques. List their merits and demerits. **07**  
 (b) Explain Direct Memory Access Microprocessor Interfacing. **07**
- OR**
- Q.4** (a) Briefly explain OTPROM, EPROM, and Flash Memory. **07**  
 (b) Write short note on wireless protocol. **07**
- Q.5** (a) Explain functionality of digital camera according to designer's perspective. **07**  
 (b) Write short note on tool chain for building embedded software. **07**
- OR**
- Q.5** (a) Describe objections of testing embedded system code on host systems. **07**  
 (b) Explain different methods of getting software into target system. **07**

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