

GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. - SEMESTER – VII • EXAMINATION – WINTER 2012

Subject code: 170705**Date: 28/12/2012****Subject Name: Embedded Technology****Time: 10.30 am - 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** What is the design metrics used in embedded systems? Also discuss the challenges that arise during the design process of an embedded system. **07**
- (b)** What are the different models employed during the design process of embedded software? What is polling for events model? **07**
- Q.2 (a)** Discuss the case study on digital camera as an embedded system. **07**
- (b)** What is load balancing? How is it achieved by combined partitioning? **07**
- OR**
- (b)** How infinite loop is used in embedded system software? What are the advantages of re-entrant function in embedded system software? **07**
- Q.3 (a)** What are the criteria for choosing an appropriate programming language for embedded software? What makes C language a popular choice? **07**
- (b)** What are the features of UML? How is an anonymous object denoted in UML? **07**
- OR**
- Q.3 (a)** What is a ROM image? Explain the process of obtaining a ROM image from an assembly language program with block diagram. **07**
- (b)** What is SoC? "SoC is a design innovation." Justify the statement. **07**
- Q.4 (a)** What is an exception? How is an error handling task executed on throwing exception? **07**
- (b)** Compare and contrast between function, ISRs and tasks. **07**
- OR**
- Q.4 (a)** What is scheduling? Compare two scheduling strategies for real time scheduling – preemptive mode and round robin scheduling. **07**
- Q.4 (b)** Define following – **07**
- | | | | |
|-----------|--------------|----------|------------|
| [1] lock | [2] Spinlock | [3] TCB | [4] thread |
| [5] MUTEX | [6] RPC | [7] pipe | |
- Q.5 (a)** What is RTOS? What are the design principles while using RTOS to design an embedded system? **07**
- (b)** How does memory allocation differ in RTOS and OS? What is memory locking? **07**
- OR**
- Q.5 (a)** What are operating system functions at RTOS kernel? What do you mean by hierarchical RTOS? **07**
- (b)** List three ways in which RTOS handles the ISRs in multitasking environment. What is the advantage of two-three level handling of interrupts? Explain IST. **07**
