

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII • EXAMINATION – WINTER 2013

Subject Code: 171005**Date: 03-12-2013****Subject Name: Embedded Systems****Time: 10:30 TO 01:00****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) What do you mean by embedded system? Discuss the various components of embedded System design. **07**

(b) Which are the basic features adopted from RISC (Reduced Instruction Set Computer) architecture to enhance the performance of ARM architecture, explain in short two of them. **07**

Q.2 (a) Discuss with examples any two of the following ARM instructions. **07**

i) MLA ii) ORR iii) LDMIA

(b) Discuss the Thumb programmer's model of ARM architecture. **07**

OR

(b) Compare and discuss in short the watch dog timer and real time clock feature of embedded systems. **07**

Q.3 (a) Which are the various serial communication protocols used in embedded system design? Discuss in short two of them. **07**

(b) Explain in short Bluetooth and Zig-Bee wireless protocol used in embedded systems. **07**

OR

Q.3 (a) Which are the various parallel communication protocols used in embedded system design? Discuss in short two of them. **07**

(b) Discuss the difference between Process, Thread and Task with respect to real time operating system (RTOS). **07**

Q.4 (a) Explain the concept of semaphore used in embedded system software development; also lists various types of semaphores. **07**

(b) What do you mean by socket functions and RPC functions with respect to RTOS and show its applications. **07**

OR

Q.4 (a) Discuss the basic functions of a Real Time Operating Systems (RTOS), explain in short the process management function of RTOS. **07**

Q.4 (b) Explain in short the cooperative scheduling model with example of the RTOS task scheduling. **07**

Q.5 (a) How RTOS manages the memory, give the memory management strategy of RTOS in embedded system design. **07**

(b) What is the advantage of Timer and Event functions with respect to RTOS, explain in short with few functions related to Timer and Event. **07**

OR

Q.5 (a) How RTOS manages the devices and I/O subsystems, give the device management strategy of RTOS in embedded system design. **07**

(b) Discuss the Interrupt handling of RTOS environment, also show how Interrupt source calls executes. **07**
