

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. VIIth Semester–Examination – Nov- 2011****Subject code: 170705****Subject Name: Embedded Technology****Date: 29/11/2011****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) Discuss challenges and issues related to embedded software development **07**
(b) Discuss applications of embedded systems in Communication and Networking **07**
- Q.2** (a) What is scheduling? Discuss different types of scheduling algorithms in brief. **07**
(b) What is real time operating system? Discuss difference between real time operating system and general purpose operating system. **07**
- OR**
- (b) What is semaphore? What are the different types of semaphore used for inter-process communication? Explain any one with example **07**
- Q.3** (a) What are the advantages and disadvantages of writing embedded software in C language compared to assembly language? What are the situations in which programming in assembly is necessary or appropriate? **07**
(b) What are the input-output devices used with embedded systems? What are the considerations required while writing programs for handling I/O devices? Describe polled waiting loop and interrupt-driven I/O with example. **07**
- OR**
- Q.3** (a) Discuss embedded software development process. What are the software modules and tools available for implementation of an Embedded System? **07**
(b) What is host system and target system? Discuss steps for transferring embedded system software into target system **07**
- Q.4** (a) Discuss interfacing of 8 LEDs with 8051 microcontroller. Draw circuit diagram and write program to flash LEDs at the interval of 1 second in assembly or C language. **07**
(b) Explain interfacing of analog to digital converter with 8051 microcontroller. Discuss steps for the programming **07**
- OR**
- Q.4** (a) Discuss serial communication interface. Write program for serial communication between 8051 microcontroller and computer in C or assembly language **07**
(b) Explain interfacing of matrix keyboard with embedded processor. Write programming steps **07**
- Q.5** (a) What is the difference between RISC and CISC processor? Explain architecture of ATMEL RISC processor **07**

- (b) What is interrupt? Discuss interrupt programming in assembly or C language. **07**

OR

- Q.5 (a)** Answer the following questions in brief **07**
- [1] What is hardware-software co-design?
 - [2] What is process?
 - [3] What is thread?
 - [4] What is MUTEX?
 - [5] What is RTLinux?
 - [6] How many timers are available in 8051 microcontroller?
 - [7] What will be content of program counter after pressing RESET switch?
- (b) Explain internet-enabled embedded systems. What type of protocol is used in internet-enabled embedded system? **07**
