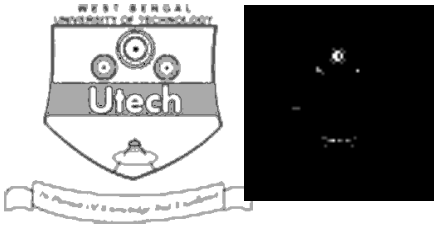
CS/M.Tech (CSE)/SEM-2/MCS-204B/09
REAL TIME & EMBEDDED SYSTEM (SEMESTER - 2)



1. .....
Signature of Invigilator

2. .....
Signature of the Officer-in-Charge

Reg. No.

Roll No. of the Candidate

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CS/M.Tech (CSE)/SEM-2/MCS-204B/09
ENGINEERING & MANAGEMENT EXAMINATIONS, JULY – 2009
REAL TIME & EMBEDDED SYSTEM (SEMESTER - 2)

Time : 3 Hours] [Full Marks : 70

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. You have to answer the questions in the space provided marked 'Answer Sheet'. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

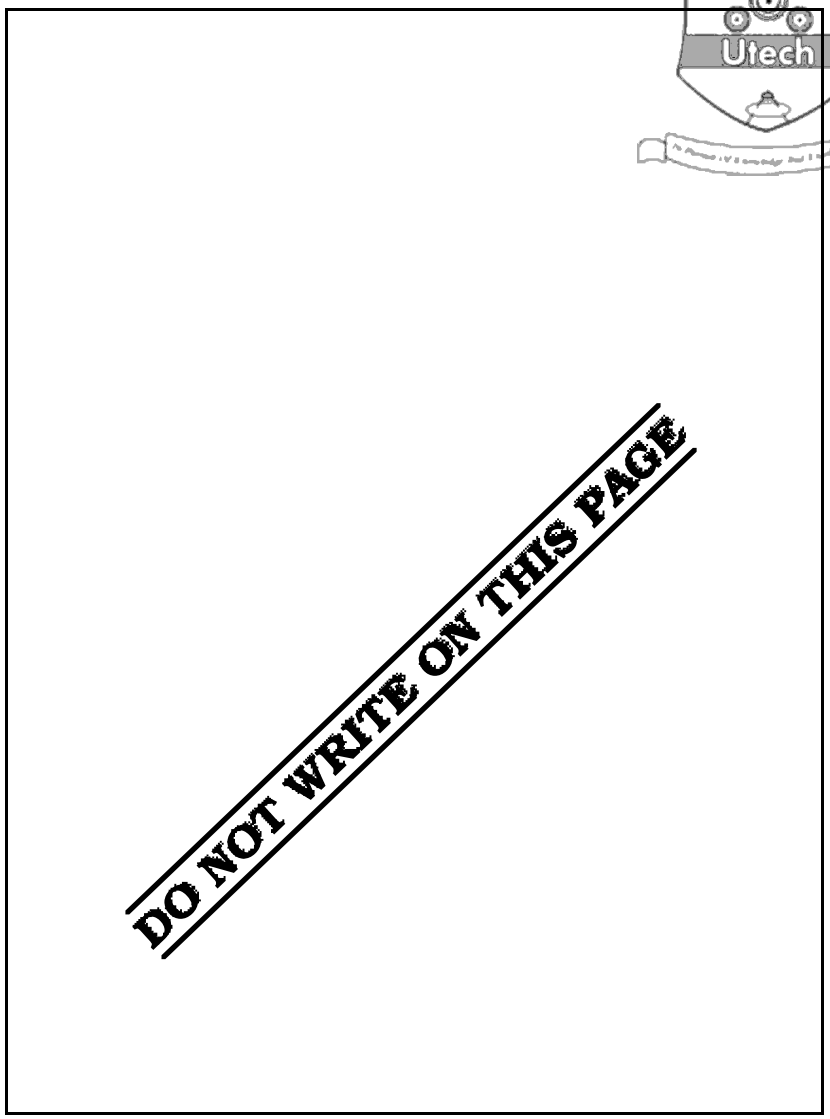
No additional sheets are to be used and no loose paper will be provided

FOR OFFICE USE / EVALUATION ONLY

Marks Obtained

Question Number											***Total Marks***	***Examiner's Signature***
Marks Obtained												

.....
Head-Examiner/Co-Ordinator/Scrutineer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REAL TIME & EMBEDDED SYSTEM
SEMESTER - 2

Time : 3 Hours] [Full Marks : 70

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Answer Question No. 1 and any *five* from the rest.

20 + (5 ∞ 10) = 70

1. Answer any *four* questions : 4 ∞ 5

   a) Discuss on the key constraints related to embedded system design.

   b) What do you mean by Hard, Firm and Soft Real Time Systems ?

   c) What is the role of Hardware Software Co-design and Co-synthesis in embedded system design ?

   d) Discuss on the key features of a Real-Time Operating System.

   e) What do you mean by Interrupt Latency and Interrupt Dispatch Latency ?

   f) What do you mean by propagation delay, hold time delay and set-up delay in logic circuits ?

2. a) Discuss with the help of a block diagram how, Closed Loop Feedback Control is used in Real-Time Systems.

   b) Critically Comment — "Real Time Systems must be responsive to events". 8 + 2

3. a) Discuss on the following terms in context to Real-Time Task Scheduling :

   i) Proficient Scheduler

   ii) Optimal Scheduler

   iii) Jitter.

   b) Discuss on the scheduling issues related to periodic tasks in contest to Real-Time Scheduling. 6 + 4

4. a) Discuss the significance of Hardware – Software Partitioning in Embedded System Development.

   b) What do you mean by Simulation and Synthesis of design models ? 6 + 4

5. a) Compare between absolute deadline and relative deadline of tasks. Define response time of a task. What do you mean by task precedence ?

   b) Briefly the Earlies deadline first scheduling of real-time tasks. 6 + 4

6. a) Discuss how interrupts are scheduled in a Real-Time OS.

   b) Discuss on the different types of processor architecture used to build Embedded System Hardware.

   c) What is the principle of storage in Flash Memory ? 3 + 5 + 2

7. a) What do you mean by entity and architecture in context to VHDL ? What is a process ? State the significance of a process in the VHDL description with a given example. What is a signal in VHDL ?

   b) Discuss with an example how a sequential circuit is described in VHDL. 7 + 3

8. Write short notes on the following : 5 + 5

a) Table Driven Scheduling

b) Data Sharing among Tasks.

END