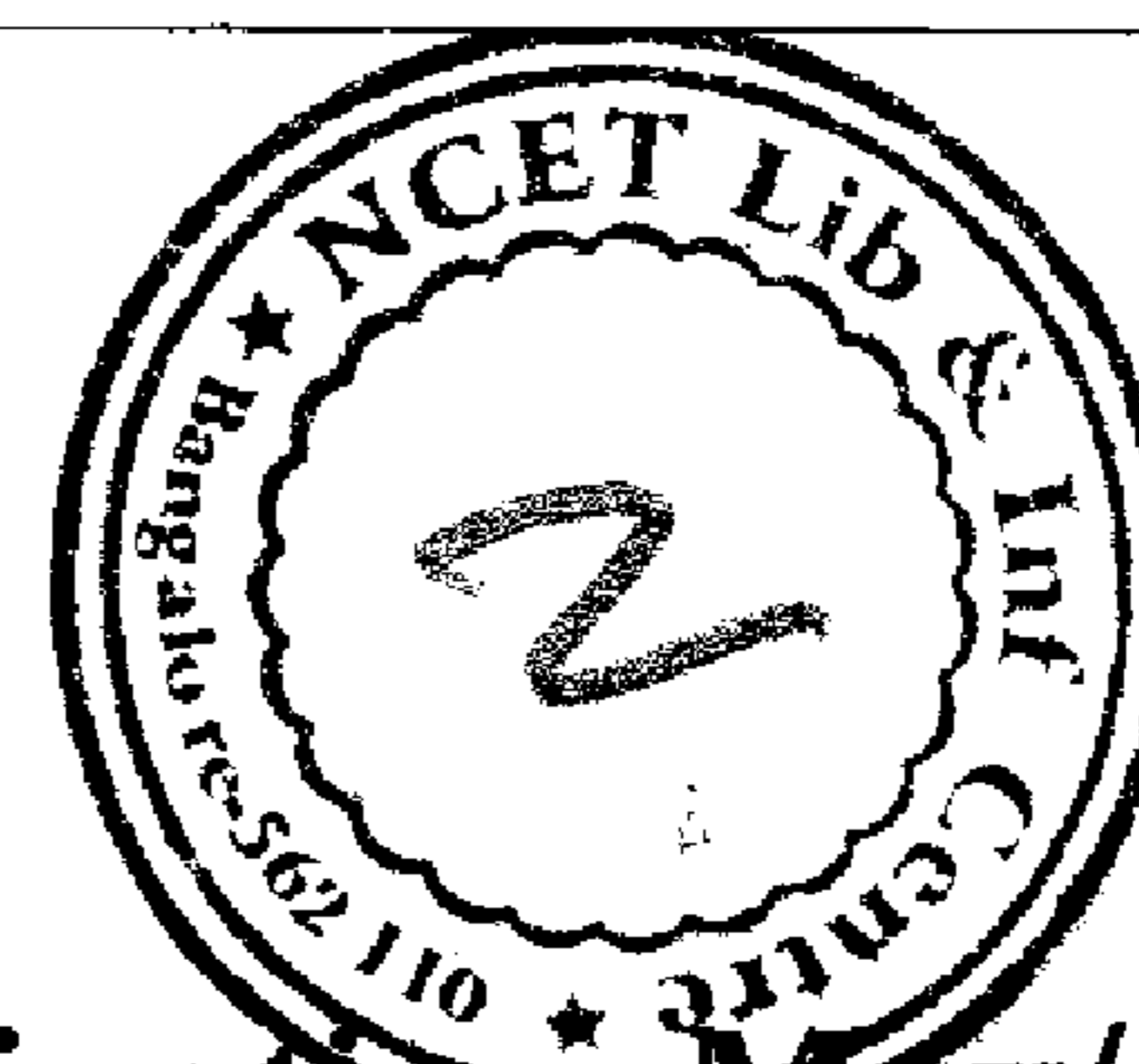


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06CS74

**Seventh Semester B.E. Degree Examination, May/June 2010**  
**Embedded Computing Systems**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting  
at least TWO questions from each part.**

**PART – A**

- 1 a. How does an embedded system differ from a general purpose computer? (04 Marks)
- b. What are the possible devices available to a system designer to use it as a processor in an embedded system? What are the important considerations when selecting a processor? (10 Marks)
- c. What are the challenges faced in designing an embedded system? (06 Marks)
- 2 a. Explain briefly the different software modules and tools for designing an embedded system. (06 Marks)
- b. Describe the internal serial communication ports available in microcontroller 68HC11. (08 Marks)
- c. Draw the functional diagram of a typical parallel port showing the handshaking signals. Describe the communication using it. (06 Marks)
- 3 a. Explain how port-based input/output is different from bus-based input/output. (04 Marks)
- b. Describe the features of CAN bus and its protocol for serial communication. (08 Marks)
- c. What is PCI bus? Explain the features of PCI bus and standards available. (08 Marks)
- 4 a. How are the various interrupt sources classified? (06 Marks)
- b. What is interrupt latency? How the worst case latency can be estimated? (06 Marks)
- c. What are the points that must be known and the information that must be available before writing a software for a device driver in assembly language? (08 Marks)

**PART – B**

- 5 a. Explain the state machine programming model. Draw the state transition diagram to show the finite state machine of a task in a multi-tasking program. (08 Marks)
- b. What are the parameters of a task control block (TCB) of a task? Why should each task have a distinct TCB? (06 Marks)
- c. Differentiate between function, task and ISR. (06 Marks)
- 6 a. What is a process manager? What are the services of process manager? (06 Marks)
- b. How does memory allocation differ in RTOS as compared to conventional OS? Explain what is memory locking. (06 Marks)
- c. Briefly explain the three ways in which RTOS handles the ISRs in a multitasking environment. (08 Marks)
- 7 a. What are the steps by RTOS to meet hard-real time dead lines? (06 Marks)
- b. What are the methods of optimizing memory space in RTOS? (06 Marks)
- c. Describe earliest deadline first (EDF) and rate monotonic schedule (RMS) scheduling models. (08 Marks)
- 8 a. What is a target system? With the help of a block diagram, illustrate the different components of target a system. How does the target system differ from the final embedded system? (08 Marks)
- b. What is locator? What are the features of locator? (06 Marks)
- c. With a neat block schematic, explain how would you get an embedded software into the target system? (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.