Real Time Systems
(CS-310, Dec 2005)

Note: Section A is compulsory. Attempt any four questions from Section B and C, taking at least two questions from each part.

Section-A

1. a) What are important characteristics of real time systems?
   b) Define the term hard real systems.
   c) How microprocessor based real time scheduler is different from real time schedulers.
   d) What is the role of deterministic scheduling?
   e) List the important features of ADA useful for real time programming..
   f) Name the architectural requirements for tightly coupled real time systems.
   g) What is the difference between reliable software and software reliability?
   h) Give the advantages of integration of real time and knowledge based systems.
   i) How alpha testing is different from beta testing?
   j) What is the role of neural networks in real time systems?

Section-B

2. Explain the concept of periodic and aperiodic tasks with the help of suitable examples.
3. Give an overview of value based schedulers.
4. Write Euclid's algorithm in ADA using recursion.
5. Give the design procedure for an interrupt drive GEM.
6. Discuss the role of luzzy logic in detail in real time knowledge based system.

Section-C

7. Design a real time system which models the operation of an automobile. The Simulator consists of the following sub-systems.
   a) Steernig
   b) Breaking
   c) Acceleration
   d) Dashboard display
8. a) Give an overview of TMR systems.
   b) Explain which type of real time kernel would be most appropriate for the following systems and why.
   Navigation system
   Airline reservation system
   Nuclear power station
9. a) What do you mean by the term arbitration scheme?
   b) Write the ring buffer read and write procedure in ADA.