Sixth Semester Examination – 2013
OPERATING SYSTEM
Branch : ECE/ETC
CODE : A 306
Time: 3 Hours
Max marks: 70
Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1   Answer the following questions: (2 x 10)
- a) What is the purpose of system calls?
- b) What is thrashing?
- c) What is the main advantage of multiprogramming?
- d) What is critical section?
- e) Explain in detail the structure of PCB.
- f) What is Thread? Mention the benefits of Multithreaded Programming.
- g) Explain about swapping.
- h) Differentiate between interrupts and exceptions.
- i) Distinguish between logical and physical address space.
- j) What is meant by context switch?

Q2   a)   Suppose that the following processes arrive for execution at the times   (5)
indicated. Each process will run the listed amount of time. In answering
the questions, use nonpreemptive scheduling and base all decisions on
the information you have at the time the decision must be made.

Process	Arrival Time	Burst time
P1	0.0	9
P2	0.2	4
P3	1.0	1

   b)   What is the average turnaround time for these processes with the SJF   (5)
scheduling algorithm?

      What are the four necessary conditions of deadlock prevention?

Q3   a)   Given memory partitions of 100K, 500K, 200K, 300K and 600K (in   (5)
order). How would each of the First-fit, Best-fit and Worst-fit algorithms
place processes of 210K, 415K, 118K and 422K (in order)?
Which algorithm makes the most efficient use of memory?
   b)   What is a semaphore? Explain busy waiting semaphores.   (5)

Q4   Describe Banker's algorithms to detect deadlock in a system. What are   (10)
the possible recovery strategies once deadlock is detected?

Q5   a)   List the disadvantages of paged memory management techniques and   (5)
segmentation memory management techniques.

    b)   Distinguish between internal and external fragmentation. Provide any   (5)
two solutions to avoid external fragmentation.

Q6   a)   Suppose that a disk drive is currently serving a request at cylinder 11.   (5)
The queue of pending requests in FIFO order is 98, 180, 34, 126, 14,
124, 68 and 67. Starting from the current head position, what is the
total distance that the disk arm moves to satisfy all the pending
requests, for each of the following disk-scheduling algorithm?
i) FCFS ii) SSTF iii) SCAN

    b)   Explain contiguous allocation and linked list allocation for implementing   (5)
file storage.

Q7   a)   Consider the following page reference string: (5)
       1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6
How many page faults would occur for the LRU page replacement
algorithm, assuming three frames?

    b)   Differentiate between pre-emptive and non-pre-emptive scheduling.   (5)

Q8   Write short note on(any two):   (5 x 2)
    a)   Real Time System
    b)   Spooling
    c)   virtual memory
    d)   Time-sharing system