Examination	: Block Sessional(Repeater)	**Seat No.**	:
Date	: 4/04/2014	**Day**	: Friday
Time	: 11:00 to 12:15	**Max. Marks**	: 36

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1   Do as directed.

(a) Discuss various categories to get benefits of multithreaded programming.   **[2]**
(b) Write down four circumstances where CPU scheduling decision may take place.   **[2]**
(c) Give difference between Loosely coupled system and Tightly coupled system.   **[2]**
(d) With a single resource deadlock occurs   **[2]**
(a)If there is a single process competing for that resource.
(b)If there are more than 2 processes competing for that resource
(c)If there are only two process competing for that resource
(d)None of this
(e) Consider a paging system with the page table stored in memory.   **[2]**
a. If a memory reference takes 200 nanoseconds, how long does a paged memory reference take?
b. If we add associative registers, and 75 percent of all page-table references are found In the associative registers, what is the effective memory reference time? (Assume that finding a page-table entry in the associative registers takes zero time, if the entry Is there.)
(f) Assume a page reference string for a process with '**m**' frames (initially all empty). The   **[2]**
Page reference string has length '**p'** with '**n'** distinct page numbers occurring in it. For any page-replacement algorithms,
a. What is a lower bound on the number of page faults?
b. What is an upper bound on the number of page faults?

Q.2   Attempt *Any TWO* of the following questions.   **[12]**
(a) Discuss various multithreading models.   **[6]**
(b) Draw 7 state and Unix 9 state process model.   **[6]**
(c) Discuss four techniques of deadlock preventions.   **[6]**

Q.3   (a) Consider the following set of jobs with their arrival times, execution time (in minutes).   **[6]**

Job Ids	Arrival Time	Execution time
1	0	5
2	1	15
3	3	12
4	7	25
5	10	5

Calculate the mean turn-around time and the throughput for FCFS, SJF non preemptive scheduling algorithms.
(b) Discuss how internal and external fragmentation arises in paging and segmentation respectively   **[6]**
with example.

OR

Q.3   (a) Discuss inverted page table and hash page table policies in detail.   **[6]**
(b) (1) Discuss Counting based page replacement policies.   **[4]**
(2) Discuss Enhanced Second Chance Page Replacement Algorithm.   **[2]**