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**B.E / B.Tech (Full-time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2011
COMPUTER SCIENCE AND ENGINEERING BRANCH
(Common To Information Technology)**

**FOURTH SEMESTER
CS9252 – OPERATING SYSEMS
REGULATIONS 2008**

Time : 3 hrs

Max Mark : 100

Answer ALL Questions

Part – A (10x2 = 20Marks)

1. Differentiate thread and process
2. What is graceful degradation?
3. Define busy waiting.
4. What is the significance of state transitions in an operating system?
5. Define belady's anomaly.
6. Brief on the causes of thrashing.
7. How free space management can be done using bit vector?
8. What is the purpose of mounting in a file system?
9. What is dual mode of operation?
10. Differentiate time sharing and Real Time System.

Part – B (5x 16 = 80 Marks)

- 11.a. Discuss system calls with regard to Operating System Management functions. (10)
- b. Discuss layered approach of Operating System. (6)

12.a(i) Consider the following Snapshot of a system. Use Banker's algorithm. (8)

	Maximum			Allocation			Available		
	A	B	C	A	B	C	A	B	C
P ₁	3	2	4	1	0	2	3	4	1
P ₂	3	5	1	0	3	1			
P ₃	2	7	7	2	4	5			
P ₄	5	5	0	3	0	0			

- (i) Find the context of matrix need?
- (ii) Is the system in a safe state?
- (iii) If P₁ asks for one more instance of A can the resource be allocated immediately.

(ii) Explain how mutual exclusion is achieved using Test-and-set instruction. (8)

(OR)

b. Consider the following set of processes, with the length of the CPU burst time and arrival time in milliseconds.

Process	burst time	Priority	Arrival time
P ₁	10	3	0
P ₂	1	1	8
P ₃	2	5	10
P ₄	1	4	12
P ₅	5	2	13

Draw Ganttcharts illustrating execution of these processes using (i) FCFS (ii) SJF preemptive (iii) Non preemptive SJF (iv) Priority (preemptive) and (v) Round-Robin (Quantum = 1) scheduling. Calculate the waiting time and turn around time of the scheduling algorithms.

13.a.Explain any 2 techniques used for structuring the page table.

(OR)

b. Consider the following page reference string

2,3,4,5,3,2,6,7, 3,2,3,4,1,7,1,4,3,2,3,4,7

Find the number of page faults using the following page replacement algorithms.

Assign the frame size as 3.

(i) LRU (ii) FIFO (iii) Optimal

14.a. Explain the various disk scheduling algorithms in terms of the disk request queue given below:

95, 183, 37, 120, 15, 120, 60, 72

(OR)

b.(i) Explain contiguous, linked and indexed methods of allocating disk space. (8)

(ii) Explain the various directory structures. (8)

15.a. Explain how process management and scheduling is implemented in Linux.

(OR)

b. What are the inter process communication mechanisms supported in a typical Operating System?