

B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2012
Computer Science and Engineering & Information Technology

FOURTH Semester: 4
CS9252 Operating Systems
(REGULATIONS 2008)



Time: 3 Hrs

Max Mark:100

Answer ALL Questions

Part – A (10 * 2 = 20 Marks)

1. Explain a way by which CPU and I/O processors can be kept busy. (2)
2. Differentiate light weight and heavy weight process. (2)
3. State 4 situations which lead to preemption. (2)
4. Suggest a solution for dining philosopher's problem using semaphores. (2)
5. Differentiate logical and physical address. (2)
6. Differentiate external and internal fragmentation.(2)
- 7.Explain any 4 file operations.
8. What is sequential access and give one use of sequential access?
9. What is a kernel?
- 10 What is the use of fork system call?

Part – B (5 * 16 = 80 Marks)

- 11.Explain how process management and scheduling is implemented in Linux.
- 12a.Explain the following operating system structure.
 - (i) DOS operating system
 - (ii) Linux / Unix operating system
 - (iii) Layered operating system

(OR)

- 12.b i.Explain how hardware protection can be achieved. (5)
- ii. Explain how parameters can be passed to system call. (6)
- iii. Explain dual mode of operation. (5)

13.a i. Apply FCFS, SJF, RR (time quantum = 3) and priority (low value implies high priority) scheduling. Find waiting and turn around time of the process. (10)

process	Arrival time	Burst time	priority
P1	.5	3	1
P2	.9	2	3
P3	1.2	1	2
P4	1.3	1.5	1
P5	1.8	1.7	1

ii. Write an algorithm to solve critical section problem and explain the working of the algorithm. (6)

(OR)

13.b i. Apply Banker's algorithm. Is the system safe? (7)

Allocation

Maximum

process	R1	R2	R3	R4	R1	R2	R3	R4
P1	0	0	1	2	0	0	1	2
P2	2	0	0	0	2	7	5	0
P3	0	0	3	4	6	6	5	6
P4	2	3	5	4	4	3	5	6
P5	0	3	3	2	0	6	5	2

Available

R1	R2	R3	R4
2	1	0	0

(ii). If a request from p3 arrives for (0,1,0,0), can the request be immediately granted? (3)

(iii). Explain wait-for-graph. (6)

14.a.i. Explain the basic paging hardware and how sharing can be achieved in a segmentation environment. (8+4)

(ii) Apply LRU page replacement algorithm. Find the number of page faults. Consider 3 frames (4)

7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1

(OR)

14.b.i.) Apply optimal page replacement algorithm. Find the number of page faults.

Consider 3 frames (4)

7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1

(ii) Explain inverted page table (8)

(iii) Explain thrashing. (4)

15.a. Explain the various algorithms for implementing disk scheduling.

(OR)

15.b. Explain the various methods for allocating disk space. (16)