Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐

K 3533

M.C.A. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Second Semester

MC 1655 — OPERATING SYSTEMS

(Regulation 2005)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the use of the shell?

2. What is the need for distributed lock manager?

3. Differentiate job and CPU scheduling.

4. What will happen if the long–term scheduler selects CPU bound processes?

5. Differentiate Monitor and semaphore.

6. Mention the methods that ensure that deadlocks cannot occur.

7. Differentiate demand paging and swapping.

8. What is spatial locality of reference?

9. What is the need of an inode?

10. List the device classes in LINUX.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the essential properties of the following Operating Systems : (8)

      (1) Batch Operating Systems

      (2) Multi Programming Operating Systems

      (3) Real time Operating Systems

      (4) Distributed Operating systems.

   (ii) Discuss the layered approach in OS. Discuss the merits and demerits of the scheme compared with the other schemes. (8)

Or

   (b) Are System calls the same as function calls? Discuss the types and use of system calls. (16)

12. (a) For the process given below compare the turnaround time and average waiting time of each process using (16)

  (i) First come first served

  (ii) Shortest job first

  (iii) Shortest remaining time

  (iv) Round robin (quantum = 2)

Process	Arrival time	Processing time
A	0.000	4
B	2.000	7
C	3.000	2
D	4.000	2

Or

(b) What is interprocess communication? Discuss the different types of IPC. (16)

13. (a) (i) Is cycle a sufficient condition for a deadlock in multiple instance single request system? Justify. (4)

  (ii) Use the Baker's algorithm and for the following snapshot of the system

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	2	6	3	0
P1	1	0	0	0	1	7	5	0				
P2	1	4	5	3	2	4	5	6				
P3	0	6	3	2	0	6	4	2				
P4	0	0	2	4	0	6	5	6				

  (1) Compute the need matrix.

  (2) Is the system in a safe state?

  (3) If a request from process P1 arrives for (0, 3, 2, 0) can the request be granted immediately? (12)

Or

(b) Explain the software and hardware means of addressing the critical section problem. (16)

14. (a) Highlight the need, merits and demerits for

    (i) Virtual memory

    (ii) Fixed Partition

    (iii) Variable Partition

    (iv) Demand paging.

Or

(b) What is the need for page replacement policies? Explain the various page replacement policies highlighting the merits and demerits of each policy with suitable examples.

15. (a) Discuss the file allocation methods in detail.

Or

(b) What is the file system? Explain the file system implementation in detail.

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