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B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Seventh Semester

(Regulation 2004)

Electronics and Communication Engineering

EC 1007 — OPERATING SYSTEMS

(Common to B.E. (Part-Time) Sixth Semester Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the purpose of Operating system?

2. Describe the difference between Parallel and Distributed systems.

3. What are the major activities of an operating system in regard to main memory management?

4. What is Context switch?

5. What is the difference between preemptive and non-preemptive scheduling?

6. Why we need mapping from logical address space to physical address space?

7. State Belady's anamoly.

8. What is TLB? How it is implemented?

9. What is Virtual memory?

10. What are the functions of logical file system?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Define the essential properties of Real Time Operating Systems. (6)

   (ii) Describe the difference among the short term, medium term, and long term scheduler. (10)

Or

(b) Discuss briefly the various issues involved in implementing Inter Process Communication (IPC) in message passing system. (16)

12. (a) (i) State the basic requirement of critical section problem solution. (6)

   (ii) Explain the Bekkers algorithm for multiprocess solution that satisfy the critical section problem. (10)

Or

(b) Assume the following processes arrive for execution at the time indicated and also mention with the length of the CPU-burst time given in milliseconds.

Job	Burst time (ms)	Arrival time (ms)
P1	8	0
P2	6	0
P3	5	0
P4	4	1
P5	3	2

   (i) Give a Gantt chart illustrating the execution of these processes using FCFS, Round Robin (quantum = 6), and SJF (Preemptive and Non Preemptive). (4)

   (ii) Calculate the average waiting time and average turn around time for each of the above scheduling algorithm. (12)

13. (a) (i) Explain the Deadlock Avoidance algorithm with an example. (8)

   (ii) Explain how wait-for graph can be used to detect deadlock in a system with single instance resources. (8)

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(b) (i) Explain in detail the single partition and multi partition memory allocation scheme. (8)

(ii) Explain the indexed and linked file allocation methods. Discuss the advantages and disadvantages in those methods. (8)

14. (a) What is a page fault? Explain the various page replacement algorithms with an example. (16)

Or

(b) (i) Explain the free management using Bit Vector, Linked list and Counting methods. (8)

(ii) Explain and compare SCAN, C-SCAN, LOOK disk scheduling algorithms. (8)

15. (a) (i) Explain the Stateful and Stateless service in Distributed System. (8)

(ii) Discuss the various design issues in Distributed File System. (8)

Or

(b) Explain the Election algorithms in Distributed System. (16)