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B.E.DEGREE END EMESTEREXAMINATION, April/May 2011

Sixth semester

ELECTRONICS AND COMMUNICATION ENGINEERING

EC9077 OPERATING SYSTEMS

Time: 3 Hours

Answer ALL Questions

Max. Marks: 100

PART-A

10 x 2 = 20

1. What is time sharing?
2. What do you understand by a system call?
3. Write short notes on process.
4. What is meant by mutual exclusion?
5. Compare logical address and physical address
6. What is demand paging?
7. Write short notes on file operations.
8. Write short notes device driver
9. What are the advantages of distributed operating systems?
10. Write short notes RTOS.

PART-B

5 x 16 = 80

- 11 i Explain in detail various operating system structures with neat sketches 10
- ii Discuss dual mode operation in detail. 6
- 12a. i. What is racing? Give an illustration 6
- ii. What is a semaphore? Explain in detail the solution for Dining philosopher's problem using semaphore. 10

(OR)

- 12b. Assume the following 5 processes arrive for execution at time the time indicated.

Process	Burst time (ms)	Priority	Arrival time
P1	6	2	0
P2	2	2	1
P3	3	4	1
P4	1	1	2
P5	2	3	2

(i) Draw the Gantt chart illustrating the execution of these processes using FCFS, Round robin (quantum =1) and priority (Preemptive and Non-preemptive) scheduling algorithms. 4

(ii) Calculate the average waiting time and turn around time for the above algorithms. 12

13a. Explain the concept of demand paging. How demand paging is implemented with virtual memory? 16

(OR)

13b. What is a page fault? With the reference string given below calculate the page fault for Optimal replacement, LRU replacement and FIFO replacement with 3 and 4 frames. The reference string is 1 2 3 4 5 3 4 1 6 7 8 7 8 9 7 8 9 16

14a. What is meant by a deadlock? What are the necessary conditions for a deadlock condition? Explain how dead lock is modeled using resource allocation graph. 16

(OR)

Consider the following snapshot of the system. 16

14 b.

	Allocation				Maximum				Available			
	a	b	c	d	a	b	c	d	a	b	c	d
P0	0	0	1	1	0	0	1	1	1	5	2	2
P1	1	0	0	1	1	7	5	1				
P2	1	3	5	1	2	3	5	2				
P3	0	5	3	1	1	6	5	2				
P4	0	0	1	1	5	6	5	1				

Answer the following using Banker's algorithm

(i) What is the content of the need matrix

(ii) Is the system in a safe state

(iii) If the request for process P1 arrives for (0,3,2,0) can it be granted immediately

(OR)

15a. Explain the architecture of LINUX operating system with neat diagram 16

(OR)

15 b. Explain in detail about the issues involved in design and implementation of distributed operating system 16