



B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2013
Electrical and Electronics Engineering
V SEMESTER (REGULATION 2008)
EE 9029: OPERATING SYSTEMS

Time: 3 Hours

Max. Marks: 100

Answer ALL Questions
PART – A (10 x 2 = 20 Marks)

- 1 How do Multiprocessor systems differ from Distributed systems?
- 2 What is the main advantage for an operating-system designer of using a virtual-machine architecture? What is the main advantage for a user?
- 3 What are the major reasons for building the distributed systems?
- 4 Define semaphore and write its various types.
- 5 Why are page sizes always powers of 2?
- 6 Give an example of an application in which data in a file should be accessed in the following order:
 - Sequentially
 - Randomly
- 7 Distinguish between a STREAMS driver and a STREAMS module
- 8 What is swap space? What is its use?
- 9 What types of networking does Windows XP support?
- 10 What is Access matrix?

PART – B (5 x 16 = 80 Marks)

- 11 a (i) Discuss the various security threats
(ii) Describe the process scheduling in solaris-2, windows-2000 and linux OS.
 - 12 a (i) Write in detail about the evolution of operating system with various types.
(ii) List five services provided by an operating system. Explain how each provides convenience to the users. Explain in which cases it would be impossible for user-level programs to provide these services.
- OR**
- b (i) Explain the layered structure of an operating system by giving typical operations and the objects that are operated in each layer.
 - 13 a (i) Write in detail about Cooperating Processes and the advantages. With proper code write in detail about Producer-Consumer Problem
(ii) List the various CPU scheduling algorithms. Consider the following set of processes that arrive at time 0, Find out the average waiting time under FCFS, SJF & RR scheduling.

Process	Burst Time
P1	24
P2	3
P3	3

- OR**
- b (i) What is shared-data problem? Explain with an example , how to solve the shared data problem

- 14 a (i) Under what circumstances do page faults occur? Describe the actions taken by the operating system when a page fault occurs.
- (ii) Explain the basic concepts of segmentation. Describe a mechanism by which one segment could belong to the address space of two different processes.

OR

- b (i) Consider the following page reference string:
1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.
How many page faults would occur for the following replacement algorithms, assuming one, two, three, four, five, six, or seven frames? Remember all frames are initially empty, so your first unique pages will all cost one fault each.
- LRU replacement
 - FIFO replacement
 - Optimal replacement
- (ii) Explain the three major methods of allocating disk space to a file.
- 15 a (i) Describe about the various RAID levels.
- (ii) Show a typical PC bus structure.

OR

- b (i) Why is rotational latency usually not considered in disk scheduling? How would you modify SSTF, SCAN, and C-SCAN to include latency optimization?
- (ii) Write notes about disk management and swap-space management.