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Sixth Semester B.E. Degree Examination, June/July 2013
Operating Systems

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1
 - a. What are the two goals of an operating system (OS)? Explain briefly. (04 Marks)
 - b. Describe the batch processing system and functions of scheduling and memory management for the same. (08 Marks)
 - c. Why I/O bound programs should be given higher priorities in a multiprogramming environment? Illustrate with timing diagram. (08 Marks)
- 2
 - a. Explain system generation operations. (04 Marks)
 - b. Compare Kernel based and microkernel based OS function. (08 Marks)
 - c. Explain layered OS structure. How is it superior compared to monolithic structure? (08 Marks)
- 3
 - a. Mention the three kinds of entities used for concurrency within a process in threads in Solaris, along with a diagram. (04 Marks)
 - b. With a state transition diagram and PCB structure, explain the function of the states, state transitions and the functions of a schedule. (08 Marks)
 - c. Explain the race condition in airline reservation system with an algorithm. (08 Marks)
- 4
 - a. Compare static and dynamic memory allocation. What are the four program components for which the memory is to be allocated? (04 Marks)
 - b. Describe: i) Best fit technique for free space allocation and ii) Variable partitioned allocation with their merits and demerits. (08 Marks)
 - c. Describe buddy system allocator for program controlled data. How does it differ from process-of-two allocator? (08 Marks)

PART – B

- 5
 - a. Explain “page out daemon” for handling virtual memory in UNIX OS. (04 Marks)
 - b. Describe the address translation using ATU and TLB in demand paged allocation with a block diagram. (08 Marks)
 - c. Determine the number of page faults in FIFO and LRU policies for the following page reference string. Pages: 5, 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1. Assume that there are 3 page frames and all are initially empty and the first page loaded causes a page fault. Also compare these two techniques. (08 Marks)
- 6
 - a. Compare sequential and direct file organization. (04 Marks)
 - b. Describe the interface between file system and IOCS. (08 Marks)
 - c. Explain the file system actions when a file is opened and a file is closed. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 7 a. What are the functions of medium and short term schedulers? (04 Marks)
- b. Determine mean turn around time for SJN and RR scheduling, assuming a time slice of 1 second for the following table:

Process	Arrival time in seconds	Execution time in seconds	Deadline in seconds
P ₁	0	3	4
P ₂	2	3	14
P ₃	3	2	6
P ₄	5	5	11
P ₅	8	3	12

- c. Describe the various blocks in a long term scheduling with JCB structure. (08 Marks)
- 8 a. Explain the primitives used for the transmission and reception of messages in an OS. (04 Marks)
- b. Describe message delivery protocols and the exceptional conditions during message delivery with an example. (08 Marks)
- c. Explain the interprocess communication mechanisms in UNIX OS. (08 Marks)
