Code No: **R31056**   **R10**   **Set No. 1**

III B.Tech I Semester Supplementary Examinations, October/November - 2017
OPERATING SYSTEMS
(Common to Computer Science Engineering and Information Technology)

Time: 3 hours   **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1 a) Explain the layered approach and microkernel approach to operating system design. [7M]

b) Explain system calls and their types. [8M]

2 a) Consider the following set of process with the length of CPU burst time given in milliseconds: [9M]

Process	Arrival Time	Burst Time	Priority
P1	2	2	3
P2	3	3	2
P3	0	1	4
P4	4	2	1
P5	3	2	3

Draw the four Gantt charts illustrating the execution of these processes using FCFS, SJF, Preemptive priority scheduling and calculate waiting and turnaround time of each process for each scheduling algorithm.

b) What is scheduler? Explain various types of schedulers and their roles. [6M]

3 a) What is readers-writers problem? Give solution with semaphores. [7M]

b) What are the advantages of monitors over semaphores? Solve the Dinning philosopher's problem using monitors. [8M]

4 a) What is effective access time? Compute it for 70% hit ratio, 20nsec to search TLB and 100nsec to access memory. Observe the difference when it is changed to 90% hit ratio. [7M]

b) What is segmentation? Explain in detail about general method with hardware implementation of segmentation. [8M]

5 a) Compute the number page faults for LRU, optimal page replacement strategies for the given reference string 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2 with 3 page frames. [8M]

b) What is the cause of thrashing? How does the system detect thrashing? Once it detects thrashing, what can the system do to eliminate this problem. [7M]

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6 a) Explain in detail the banker's algorithm for deadlock avoidance with example. [9M]

   b) Explain the procedure for eliminating deadlocks using resource pre-emption and process termination. [6M]

7 a) What are the allocation methods of a file system? Explain briefly. [8M]

   b) Explain local file systems and directory structures file system implementations in detail. [7M]

8 a) Why disk scheduling is needed? The disk is initially at cylinder 53. Schedule the given requests with FCFS, SCAN, SSTF, LOOK algorithms. 98, 183, 37, 122, 14, 124, 65, 67, 10, 150. [8M]

   b) Explain swap space management in detail. [7M]

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