

Registration No. :-

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Total number of printed pages – 3

B. Tech
PCCS 4304

Sixth Semester Examination – 2013

OPERATING SYSTEM

BRANCH : CSE

QUESTION CODE : A184

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10
 - (a) What is throughput ?
 - (b) What are the advantages of multiprogramming operating system ?
 - (c) What is caching ?
 - (d) Define and differentiate between preemptive and non preemptive scheduling.
 - (e) What is context switch ?
 - (f) What is DMA ?
 - (g) What do you mean by a thread ? What is the need of multithreading ?
 - (h) Is it possible to have a deadlock involving only one single process ?
 - (i) What do you mean by transaction atomicity ?
 - (j) What is virtual memory ?
2.
 - (a) What is batch operating system ? Describe the working principle of a simple batch operating system with its memory layout. 5
 - (b) Discuss the major reasons for building a distributed system. 5\

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3. (a) Explain, in brief, the different services provided by operating system. 5
 (b) Describe with diagram the different states of a process. 5
4. Suppose that the following processes arrive for execution at the times indicated. Each process will run the listed amount of time. In answering the questions, use non preemptive scheduling.

<u>Process</u>	<u>Arrival Time</u>	<u>Burst Time</u>
P1	0.0	8
P2	0.4	4
P3	1.0	1

- (a) What is the average turn around time for these processes with the FCFS scheduling algorithm ? 5
 (b) What is the average turn around time for these processes with the SJF scheduling algorithm ? 5
5. (a) What do you mean by process synchronization ? Explain, in brief, about the critical section problem. 5
 (b) What is a deadlock ? Describe the features that characterize deadlock. 5
6. (a) Explain with suitable diagram the internal and external fragmentation. 5
 (b) What is disk scheduling ? Suppose that a disk drum has 5000 cylinders, numbered 0 to 4999. The drive is currently serving at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is
 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130
 Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all pending requests for each of the disk scheduling algorithms ? 5
- (i) FCFS
 (ii) SSTF
 (iii) SCAN
 (iv) LOOK
 (v) C - SCAN.

7. (a) Consider the following page reference string. How many page faults would occur for the following replacement algorithms for 4 page frame ? Initially all frames are empty.
- 1 2 3 4 2 1 5 6 7 1 2 3 7 6 3 2 1 2 3 6
- (i) LRU replacement
- (ii) FIFO replacement. 5
- (b) What is thrashing ? Explain the different causes of thrashing. 5
8. Explain the following terms in brief : 2.5×4
- (a) Interprocess Communication
- (b) Semaphore
- (c) Swap space management
- (d) Deadlock.
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