Registration No: | | | | | | | | | | |

Total Number of Pages: 02 **B.Tech**
PCCS4304

6th Semester Regular / Back Examination 2015-16
OPERATING SYSTEM
BRANCH(S): CSE, ECE, ETC, IT, ITE
Time: 3 Hours
Max Marks: 70
Q.CODE- W335

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions: **(2 x 10)**

a) Differentiate between a Multiprogramming System and a Timesharing System.
b) What is the function of a lazy swapper?
c) Differentiate between short term, long term and medium term scheduler.
d) Why paging and segmentation are combined into one scheme?
e) What do you mean by thrashing? What is its cause?
f) Distinguish between logical address space and physical address space.
g) What is the purpose of valid / invalid bit in demand paging?
h) What is semaphore? What operations can be performed on a semaphore?
i) Differentiate between preemptive and non-preemptive scheduling.
j) Consider a logical address space of 128 pages of 1024 words each mapped onto a physical memory of 64 frames. How many bits are there in logical and physical address?

Q2 **a)** What do you mean by a Process? How it differs from a Program? Explain the structure of a Process Control Block. **(5)**
b) What is Paging? How it differs from Segmentation? Give the advantages and disadvantages of each one. **(5)**

Q3 **a)** What is a thread? Discuss and differentiate between user level and Kernel level thread with their advantages and disadvantages. **(5)**
b) What is the purpose of CPU Scheduling? Mention various scheduling criteria's. Explain in brief various CPU scheduling algorithm. **(5)**

Q4 Consider the following snapshot of a system. **(10)**

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P0	0 0 1 2	0 0 1 2	1 5 2 0
P1	1 0 0 0	1 7 5 0	
P2	1 3 5 4	2 3 5 6	
P3	0 6 3 2	0 6 5 2	
P4	0 0 1 4	0 6 5 6	

Using Banker's algorithm, answer the following questions.

(i) What is the content of matrix need?
(ii) Is the system in a safe state?
(iii) If a request from process P1 arrives for (0, 4, 2, 0) can the request be granted immediately?

Q5 **a)** Consider the following page reference string **(5)**

1,2,3,4,5,3,4,1,6,7,8,7,8,1,7,6,2,5,4,5,3,2

Calculate the number of page faults in each case using the following algorithms:

(i) FIFO
(ii) LRU
(iii) Optimal

Assume the memory size is 4 frames.

b) Explain various techniques for recovering from deadlock. **(5)**

Q6 **a)** Consider the following segment table **(5)**

Segment	Base	Length
0	240	500
1	2150	28
2	180	60
3	1175	470
4	1482	55

What are the physical addresses for the following logical addresses?

(a) 0,280 (b) 1,20 (c) 2,150 (d) 3,320 (e) 4,188

b) Discuss the Dining Philosophers problem using semaphore. **(5)**

Q7 **a)** Given memory partitions of 120K, 520K, 320K, 324K and 620K (in order). How would each of the First fit, Best fit and worst fit algorithms place processes of 227K, 432K, 127K and 441K (in order)? Which algorithm makes the most efficient use of memory? **(5)**

b) What is a file? Explain various file allocation techniques with their advantages and disadvantages. **(5)**

Q8 Write Short Notes on Any Two: **(5 x 2)**

a) Spooling
b) Fragmentation
c) Critical Section
d) Swapping