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Total number of printed pages – 2

B. Tech
PCCS 4304

Sixth Semester Regular Examination – 2015

OPERATING SYSTEM

BRANCH : IT

QUESTION CODE : J 281

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) Define Mutual Exclusion.
- (b) What is meant by Race Condition ?
- (c) What is a binary semaphore ? What is its use ?
- (d) What are turnaround time and response time ?
- (e) Compare pre-emptive and non-preemptive scheduling policies.
- (f) What is means by Resuming a Process ?
- (g) What is TLB and Hit-Ratio ?
- (h) What are demand-paging and pre-paging ?
- (i) What is a Real-Time System ?
- (j) What is virtual memory ?

2. (a) Draw the state diagram of a process from its creation to termination, including all transitions, and briefly elaborate every state and every transition. 5

(b) Define process. Describe the contents of a Process Control Block (PCB). 5

P.T.O.

3. (a) Suppose there are 2 copies of resource A, 3 copies of resource B, and 3 copies of resource C. Suppose further that process 1 holds one unit of resources B and C and is waiting for a unit of A; that process 2 is holding a unit of A and waiting on a unit of B; and that process 3 is holding one unit of A, two units of B, and one unit of C. Draw the resource allocation graph. Is the system in a deadlocked state? Why or why not? 7
- (b) List the necessary conditions for Deadlock. 3
4. (a) What is short-term, long-term and medium-term scheduling? 5
- (b) Discuss Banker algorithm in detail to avoid deadlock. 5
5. (a) What are the four necessary conditions of deadlock prevention? 5
- (b) What is critical section problem? Give two solutions for critical section problem. 5
6. (a) Differentiate between logical address and physical address. 5
- (b) Explain the concept of variable-partition contiguous storage allocation. 5
7. Why is segmented paging important (as compared to a paging system)? What are the different pieces of the virtual address in a segmented paging? 10
8. (a) What is swapping? Does swapping increase the Operating Systems' overheads? Justify your answer. 5
- (b) What criteria should be adopted for choosing type of file organization? 5

