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MCS-041

MCA (Revised)

Term-End Examination

December, 2012

05405

MCS-041 : OPERATING SYSTEMS

Time : 3 hours *Maximum Marks : 100*

Weightage : 75%

Note : *Question No. **1** is **compulsory**. Attempt **any three** questions from the rest.*

1. (a) Explain the concept of virtual memory system. **10**

   (b) Write the algorithm for the bounded buffer problem using semaphore. **10**

   (c) Explain the booting process of windows 2000 operating system. **10**

   (d) What is the difference between a loosely coupled and tightly coupled system ? Give suitable examples. **10**

2. (a) Explain any two security models for computer system. **10**

   (b) Explain all types of multiprocessor Operating Systems. **10**

3. (a) A system has 10 instances of a resource. Resource requirement of 3 processes are given as below : **10**

	P_1	P_2	P_3
Max. Requirement	8	7	5
Current Allocation	3	1	3

Is the current allocation in a safe state? If the new requirement from process P_1 of 1 instance arrives, whether the state will remain in same state ? Apply Banker's algorithm to answer this question.

(b) Obtain the total page fault using FIFO, LRU and OPT page replacement algorithm for the following sequence of pages. Consider total 3 frames in memory. **10**

1, 2, 3, 1, 4, 2, 5, 1, 3, 4, 5.

4. (a) What is a Remote Procedure Call (RPC) How is it implemented ? **10**

(b) Write Bakery's algorithm for handling critical section problem for n processor. **10**

5. (a) Explain segmented paging and paged segmentation. **10**

(b) Explain Multilevels, Acyclic graph and general graph directory structure. **10**