END TERM EXAMINATION

SECOND SEMESTER [MCA] MAY-JUNE-2014

Paper Code: MCA-106	Subject: Operating System (Batch 2010 Onwards)
Time: 3 Hours	Maximum Marks: 60

Note: Attempt any five questions, including Q.no.1 which is compulsory.

Q1   Explain in brief:-   (3x4=12)
(a) Discuss the various types of Operating System.
(b) What are the advantages in having different time quantum on different levels of multilevel queuing systems?
(c) Differentiate between Pre-emptive and Non-preemptive scheduling.

Q2   Consider the following snapshot of a system:-

	Process Allocation	Max	Available
	ABCD	ABCD	ABCD
P0	0012	0012	1520
P1	1000	1750	
P2	1354	2356	
P3	0632	0652	
P4	0014	0656	

Answer the following questions using banker's algorithm:-
(a) What is the content of the matrix *Need*? Is the system in a safe state? **(6)**
(b) If a request from process P1 arrives for (0, 4, 2, 0), can the request be granted immediately?   **(6)**

Q3   Discuss Banker's algorithm and its use to detect and resolve deadlock. Explain with an example.   **(12)**

Q4   (a) Define semaphores. How can it be used as a general synchronization tool? What advantages a semaphore have as compared to a hardware test and set instruction.   **(6)**
(b) Explain the necessary conditions that must be in effect for a deadlock. Explain in detail.   **(6)**

Q5   A computer has 1000K of main memory. The jobs arrive and finish in the following sequence Job1 requiring 200K arrives, Job2 requiring 350K arrives, Job3 requiring 300K arrives, Job1 finishes, Job4 requiring 120K arrives, Job5 requiring 150K arrives, Job6 requiring 80K arrives.
Draw the memory allocation table using best fit, first fit and next fit algorithm and find out which algorithm perform better for the sequence. **(12)**

Q6   (a) What is segmented memory management technique? Discuss its various facts in detail.   **(4)**
(b) Define the term "Overlay", with an example.   **(4)**
(c) What is Belady anomaly and Page Size anomaly? Discuss with an example. **(4)**

Q7   (a) Discuss the various file allocation strategies to store the files in secondary storage devices.   **(6)**
(b) Explain the structure of a Process Control Block.   **(6)**

Q8   Write short notes on two of the following topics:-   (2x6=12)
(a) General Model of a File system
(b) Dedicated, Shared and Virtual Devices
(c) Process scheduling algorithms.

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