



PRESIDENCY UNIVERSITY, BENGALURU  
SCHOOL OF ENGINEERING

Max Marks: 30

Max Time: 55Mins

Weightage: 15 %

Set A

TEST 3

II Semester 2016-2017 Course: COE A 210 Operating Systems

21 April 2017

Instructions:

- i. Write legibly
- ii. Scientific and non programmable calculators are permitted

Part A

(3Q x 2 M= 6Marks)

1. What is meant by Thrashing?
2. Define Rotational latency.
3. Name any two techniques to solve the External fragmentation.

Part B

(2Q x 5 M= 10 Marks)

4. List down the steps in handling the page fault.
5. Given memory partitions of 100K, 500K, 200K, 300K, and 600K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212K, 417K, 112K, and 426K (in order)? Which algorithm makes the most efficient use of memory?

Part C

(1 Q x 7 M= 14Marks)

6. Consider the following page reference string:

4, 5, 6, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 2, 1, 0

How many page faults would occur for the following replacement algorithms, assuming three frames and remember all frames are initially empty.

- a. LRU replacement
- b. FIFO replacement

7. Suppose that a disk drive has 300 cylinders, numbered 0 to 299. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is

86, 147, 213, 177, 294, 150, 102, 175, 130

Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests, for each of the following disk scheduling algorithms?

- a. FCFS   b. SSTF   c. C-SCAN   d. C-LOOK



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Set A

TEST 2

II Semester 2016-2017 Course: COE A 210 Operating Systems

24 March 2017

Instructions:

- i. Write legibly
- ii. Scientific and non programmable calculators are permitted

Part A

(4Q x 2 M= 8Marks)

1. List two examples of deadlocks that are not related to a computer-system environment.
2. What are Threads? Give any two advantages of multithreaded programming.
3. What is meant by race condition in Processes synchronization?
4. Write a brief note on mutex and semaphore.

Part B

(2Q x 6 M= 12 Marks)

5. Describe the producer consumer problem. Explain the solution using semaphores with an aid of pseudo code.
6. Discuss the three requirements to solve the critical-section problem.

Part C

(1 Q x 10 M= 10 Marks)

7. Consider the following snapshot of a system:

Process	Allocation A B C D	MAX A B C D	Available 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	

Answer the following questions using banker's algorithm.

- a. What is the content of the matrix Need?
- b. Is the system in a safe state?
- c. If a request from process P1 arrives for (0,4,2,0), can the request be granted immediately? Give the order of evaluation.



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Max Marks: 30

Max Time: 50Mins

Weightage: 15 %

Set A

TEST 1

II Semester 2016-2017 Course: COE A 210 Operating Systems

25 February 2017

Instructions:

- Write legibly
- Scientific and non programmable calculators are permitted

Part A

(4Q x 2 M= 8Marks)

- What is meant by graceful degradation?
- Briefly describe the purpose of Virtualization Manager?
- List any four reasons for process termination?
- Differentiate between automatic buffering and explicit buffering

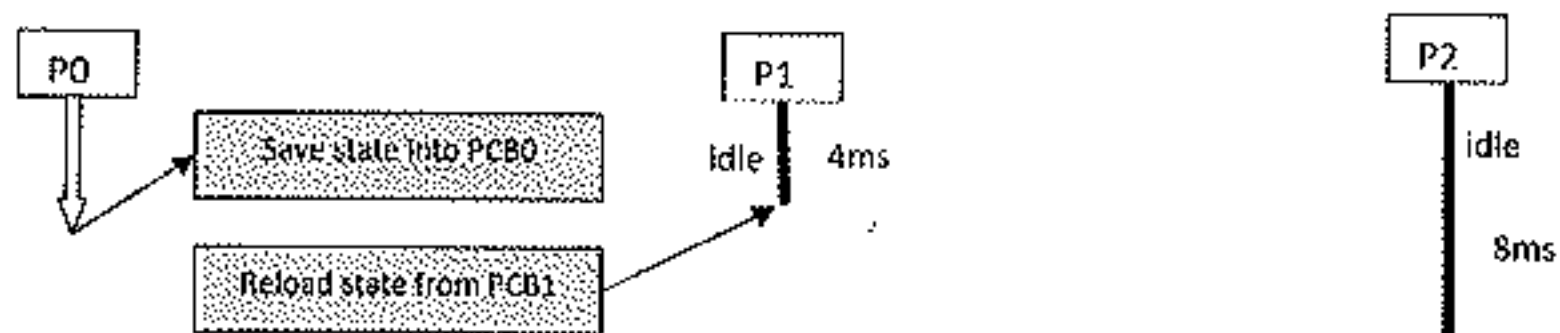
Part B

(2 Q x 5 M= 10 Marks)

- Complete the diagram showing the CPU switching between processes P0, P1 & P2. For the following scenario show the status of the process control block (PCB) which is saving and reloading in a time sharing environment.

Let P0, P1 and P2 be three processes with burst time 12 milliseconds, 8 milliseconds and 12 milliseconds respectively.

P0, P1 and P2 will wait for I/O after every 4 milliseconds of execution for 4 milliseconds.



- Explain memory hierarchy by comparing and contrasting with space and access time