

Reg. No \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
SECOND SEMESTER MCA DEGREE EXAMINATION, APRIL 2018

**Course Code: RLMCA106**  
**Course Name: OPERATING SYSTEMS**

Max. Marks: 60

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 3 marks.*

1. Differentiate the concept between process and threads.
2. What is meant by context switching?
3. What is a semaphore? Why is it used?
4. Elucidate resource allocation graph algorithm?
5. Differentiate between external and internal fragmentation.
6. Explain the concept of virtual memory.
7. Write a note on acyclic graph directory structure.
8. Write a note on file types and file operations.

**PART B**

*Each question carries 6 marks.*

9. a) Write a note on the following types of operating systems.
  - i) Real time embedded systems.
  - ii) Batch processing systems.

OR

- b) Explain the different services provided by operating systems.
10. a) What is pre-emptive scheduling? Explain round-robin scheduling with the following example.

<u>Process</u>	<u>Burst Time (ms)</u>
P1	4
P2	1
P3	8
P4	1

All 4 processes P1, P2, P3 & P4 arriving in ready queue in same order at time 0. Assume time quantum of 2ms.

OR

b) Differentiate between short term, medium term and long term schedulers.

11. a) What is critical section problem? How is it solved by Peterson's solution?

OR

b) Explain inter process communication.

12. a) Explain how Banker's algorithm can be used to avoid deadlock.

OR

b) Describe paging.

13. a) Explain FIFO, LRU and Optimal page replacement algorithms with the following reference string using 4 frames.

0, 2, 1, 6, 4, 0, 1, 0, 3, 1, 2, 1

OR

b) Suppose a disk has 200 cylinders numbered from 0 to 199. The disk arm is currently at cylinder 63. There is a queue of disk access request for cylinders 100, 175, 51, 133, 8, 140, 73, 77. Assume seek rate of 5ms and compute total seek time for FCFS and SCAN disk scheduling algorithms.

14. a) Explain the different file access methods.

OR

b) Describe any 2 file allocation methods.

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