

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

Course Code: IT305

Course Name: OPERATING SYSTEMS

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

Marks

- 1 a) Compare symmetric multiprocessing and asymmetric multiprocessing. (5)
 b) What is a process? With the help of a diagram, explain the different process states. (7)
 c) What is a Process Control Block? (3)
- 2 a) What is the purpose of system programs? Briefly explain the working of system calls. (6)
 b) What are the CPU scheduling algorithm criteria? (5)
 c) Differentiate kernel and shell. (4)
- 3 a) Consider the following five processes with CPU burst time given in milliseconds.

Process	P0	P1	P2	P3	P4
Burst Time	10	29	3	7	12

Consider (I) FCFS (II) Round Robin (Quantum = 10ms) (III) SJFS (non pre-emptive) scheduling algorithms.

- (i) Illustrate the scheduling using Gantt Chart.
 (ii) What is the turn around time of each process for each of the scheduling algorithms? (10)
 (iii) Which algorithm gives minimum average waiting time? Discuss.
- b Explain layered approach to system design. (5)

PART B

Answer any two full questions, each carries 15 marks.

- 4 a) Explain Race condition with example. What are the conditions to be satisfied to ensure solution to Critical Section Problem? (9)
 b) What is the structure of a Page table? How are they organized? (6)
- 5 a) Given the memory partition of 100KB, 500KB, 200KB and 600KB. How would each of the first fit and worst fit algorithm places processes of 212 KB, 417 KB, 112 KB and 426 KB? (7)

- b) Discuss about any two classic problems of synchronization. How is producer consumer problem solved using semaphores? (8)
- 6 a) What is belady's anomaly? (5)
- b) How memory management is implemented using Segmentation? (5)
- c) What are monitors in the context of process management? Discuss its features. (5)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) Discuss with diagrams the following Disk scheduling algorithms. (15)
(i) FCFS (ii) SSTF (iii) C-SCAN (iv) LOOK (v) C-LOOK
- b) Explain sequential and direct access of files. (5)
- 8 a) Explain the methods to avoid a deadlock situation. (10)
- b) Explain the tree structured directory structure with a diagram. What are its advantages? (10)
- 9 a) Explain the directory implementation using Linear list and hash table. (4)
- b) What are the strategies to recover from deadlock? (8)
- c) Briefly explain the file system organization in Linux. (8)
