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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SIXTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 2019

Course Code: EC366
Course Name: Real Time Operating Systems

Max. Marks: 100   Duration: 3 Hours

PART A
Answer any two full questions, each carries 15 marks   Marks

1 a) Describe the virtual machine structure of operating system design.   (8)

   b) Compare FCFS and Round Robin Scheduling algorithms.   (4)

   c) Discuss the problems associated with multiprocessor scheduling. How they can be   (3)
       solved?

2 a) Describe the function of operating system as an abstract machine.   (5)

   b) Schedule the given list of processes using SJF and Priority algorithms. Compare their   (10)
       performances.

Process	Burst Time	Priority
P1	8	3
P2	5	1
P3	2	4
P4	4	2
P5	3	3

3 a) Explain the monolithic and layered architecture of operating systems.   (12)

   b) Differentiate Pre-emptive and Non Pre-emptive Scheduling schemes. Give   (3)
       examples.

PART B
Answer any two full questions, each carries 15 marks

4 a) Discuss the different methods of preventing deadlock.   (8)

   b) Explain the basic concepts of demand paging.   (7)

5 a) What is meant by critical section problem? Why it is atomic in nature?   (5)

   b) Consider the following page-reference string: (10)

       7, 0, 1, 2, 0, 3, 1, 6, 4, 0, 1, 0, 3, 1, 2, 1
       Compute and compare the Page Fault Rate for the following replacement
       algorithms, assuming frame size to be 3.Also assume that the frames are initially
       empty.

          i)   LRU replacement

    ii)   Optimal replacement

6 a) Give the structure of a page table entry used with virtual memory.   (4)

  b) State and explain the Dining Philosopher problem. Give a suitable solution(with code) to the problem using semaphore.   (11)

PART C
Answer any two full questions, each carries 20 marks

7 a) Explain the various inter-process communication techniques supported by VxWorks and MicroC/OS.   (12)

  b) Explain the techniques for performing I/O functions   (8)

8 a) Write in detail about any three disk scheduling algorithms.   (12)

  b) Explain how μC /OS -II handles the critical section of code.   (8)

9 a) Give a detailed description about the different I/O buffering schemes.   (10)

  b) Using a block diagram explain how a real time system is implemented. Describe a real life example of an RTOS control system.   (10)

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