ONE TIME EXIT SCHEME

10CS53

USN | | | | | | | | | | |

Fifth Semester B.E. Degree Examination, April 2018
Operating System

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1 a. What is an operating system? Explain the operations of operating system. **(05 Marks)**
   b. What are system calls? Explain the types of system call. **(05 Marks)**
   c. Define the essential properties of the following :
      i) Time sharing operating system
      ii) Batch operating system
      iii) Real time operating system
      iv) Distributed operating system. **(10 Marks)**

2 a. What is process? Explain the process state with the neat diagram. **(05 Marks)**
   b. Explain about inter-process communication. **(05 Marks)**
   c. What are schedulers? Explain any one type of scheduler. **(04 Marks)**
   d. Consider the following set of processes process.

Process	Burst time	Arrival time	Priority
P₁	10	0	2
P₂	5	2	1
P₃	2	3	0
P₄	20	5	3

   Draw Gantt Charts and calculate average waiting time, average turnaround time using following CPU scheduling algorithm
      i) Preemptive shortest job
      ii) Non preemptive prosperity (0 = high priority). **(06 Marks)**

3 a. What is critical section problem? Give solution to multiple process critical section problem. **(05 Marks)**
   b. What is monitor? Explain briefly. **(05 Marks)**
   c. What are semaphore? Explain two primitive semaphore operations. **(05 Marks)**
   d. Discuss an efficient algorithm which can meet all the requirements to solve the critical section problem. **(05 Marks)**

4 a. Define deadlock. Discuss the four conditions for deadlock to occur. **(06 Marks)**
   b. Write and explain Banker's algorithm for deadlock avoidance. **(08 Marks)**
   c. "A safe state is not deadlock state but a deadlock state is an unsafe" state – Justify. **(06 Marks)**

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PART – B

5   a. Discuss the following :
         i) Internal and external fragmentation
         ii) Demand paging.   (08 Marks)
     b. Consider the following page reference string 1, 2, 3, 4, 5, 6, 2, 1, 2, 3, 7, 6 how many page
         faults would occur for the following replacement algorithms assuming three page frames in
         the main memory? All page are initially empty so that first unique pages will all cost one
         fault each.   i) FIFO   ii) LRU   iii) Optimal.   (12 Marks)

6   a. Explain any two different file access methods.   (05 Marks)
     b. Discuss the following :
         i)   File attributes
         ii)   File types
         iii) Sequential file access
         iv)   Tree structured directories
         v)   Indexed file allocation method.   (15 Marks)

7   a. Explain the following disk scheduling algorithms in brief with examples :
         i) FCFS scheduling   ii) SSTF scheduling   iii) SCAN scheduling.   (09 Marks)
     b. What is access matrix? Explain effectively now the access matrix is implemented. (06 Marks)
     c. Explain the aspect of disk management.   (05 Marks)

8   Write short notes on :
     a. Components of Linux operating system
     b. Memory management function in Linux
     c. Linux file system
     d. Inter-process communication.   (20 Marks)

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