Seat No:_____   Enrollment No:_____

PARUL UNIVERSITY
FACULTY OF IT & COMPUTER SCIENCE
BCA / IMCA Summer 2017-18 Examination

Semester: 4   Date: 21-05-2018
Subject Code: 05101252 / 05301252   Time: 10:30AM to 01:00PM
Subject Name: Operating System   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1   Answer the followings.
  A. Define the following.   (05)
    1.   Operating System
    2.   Interrupt
    3   Process
    4   Deadlock
    5.   Monitor
  B. Multiple choice type questions/ Give the sentence true or false. (Each of 01 marks)   (10)
    1. Physical memory is broken into fixed-sized blocks called _____.
          a)   frames
          b)   pages
          c)   backing store
          d)   None of these
    2. To avoid the race condition, the number of processes that may be simultaneously inside their critical section is
          a)   8
          b)   1
          c)   16
          d)   0
    3. Process is
          a)   program in High level language kept on disk
          b)   contents of main memory
          c)   a program in execution
          d)   a job in secondary memory
          e)   None of the above
    4.   The strategy of allowing processes that are logically runable to be temporarily suspended is called
          a)   preemptive scheduling
          b)   non preemptive scheduling
          c)   shortest job first
          d)   first come first served
    5.   The FIFO algorithm
          a)   executes first the job that last entered the queue
          b)   executes first the job that first entered the queue
          c)   execute first the job that has been in the queue the longest
          d)   executes first the job with the least processor needs
    6.   The degree of Multi programming is decided by long term scheduler (True / False).

    7.   A platter is made up of multiple tracks, which is further divided into several sectors in a Hard disk?   (True/False)
    8.   Semaphore is a/an _____ to solve the critical section problem.
            a) Hardware for a system
            b) Special program for a system
            c) Integer variable
            d) None of these

9. Which command is used to sort the lines of data in a file in reverse order
   a) sort
   b) sh
   c) st
   d) sort –r

10. Which module gives control of the CPU to the process selected by the short-term scheduler?
   a) Dispatcher
   b) Interrupt
   c) scheduler
   d) none of the mentioned

Q.2 Answer the followings. **(15)**
   1) What is a Mutual Exclusion? Give example.
   2) Define Threads. What is Multithreading in OS.
   3) Differentiate between a Program and a Process.
   4) Explain Human readable, Machine readable and Communication I/O devices with example?
   5) What is Preemptive and Non Preemptive Scheduling?

Q.3 Answer the following. (Any three) **(15)**
   1. What is buffering? Explain stream and block oriented I/O devices.
   2. Explain Dining Philosophers Problem.
   3. What is Fragmentation? Explain different types of fragmentation. How issues with type   of fragmentation be resolved?
   4. Four processes P0, P1, P2 and P3 are having burst time of 5,3,8 and 6 seconds respectively. Their arrival times are 0,1,2,3,5 msec resp. Draw a timeline and calculate the average waiting time using any one scheduling algorithm. 1. FCFS 2 Round Robin Scheduling (Time Quantum 3msec)

Q.4 Answer the following.
   A. Explain the concept of Realtime and Multiprogramming systems. **(05)**
   B. 1. Explain five state transition model for a process with diagram. **(07)**
       2. Explain Shortest Seek Time First (SSTF)algorithm with example. **(03)**
   OR
   B. 1. Explain Paging in detail. **(07)**
       2. Explain if-else and Switch-Case structure construct in Linux. **(03)**