Third Semester MCA. Degree Examination, Dec.2014/Jan.2015
Operating System

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1   a. What is Operating system? Explain different functions of an operating system. **(10 Marks)**
    b. Explain the following :
       i) Symmetric & Asymmetric multiprocessor   ii) Multitasking & Time sharing.
                                                                    (10 Marks)

2   a. List various services of operating system.   **(05 Marks)**
    b. What are virtual machines? How they are implemented?   **(07 Marks)**
    c. What is Process? Explain process control block with state transition diagram along with functions of each process state.   **(08 Marks)**

3   a. Explain different threading models.   **(08 Marks)**
    b. For the following data :

Process	AT	BT	Priority
P0	0	10	4
P1	1	6	3
P2	3	2	2
P3	5	4	1

    Calculate waiting time & turn around time for i) FCFS   ii) Pre-emptive SJF
    iii) Non – pre – emptive SJF   iv) Round Robin (quantum time = 1ms) v) Priority.
                                                                    (12 Marks)

4   a. What is Critical section problem? What are the requirements of critical section solution?
                                                                    (05 Marks)
    b. State and explain Bankae's algorithm for deadlock avoidance.   **(09 Marks)**
    c. Discuss different options to recover from deadlock.   **(06 Marks)**

5   a. Explain paging concept with a neat diagram.   **(08 Marks)**
    b. For the following reference string :
       7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1. Evaluate how many page faults occur for FIFO, LRU and optimal techniques for 3 frames.   **(12 Marks)**

6   a. What is Thrashing? Give the cause for thrashing.   **(06 Marks)**
    b. Explain fill allocation method with their merits and demerits. **(08 Marks)**
    c. Discuss directory structure in brief.   **(06 Marks)**

7   a. Explain the implementation of access matrix.   **(08 Marks)**
    b. For the following process request of tracks, draw charts and count head movements for
       i) FCFS   ii) SSTF   iii) SCAN   iv) SEEK.   **(12 Marks)**

8   Write short notes on the following :
    a. Inter process communication.
    b. Free space management.
    c. Linux system case study.
    d. Principles of protection.   **(20 Marks)**

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