Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Computer Science and Technology
200 level 2nd Semester Examination – Dec.-2017/Jan.-2018
CST253-2 Operating Systems Concepts and Designs

Uva Wellassa University

Part B

Number of questions: Three (03) Essay
Mark allocation: 75

1. Briefly explain the following terms in operating systems.
   a. Process States
   b. Race Condition
   c. Thrashing
   d. Mutual Exclusion
   e. Context Switching

(25 mark)

2. Consider the following set of processes with the length of CPU burst time given in milliseconds.

Process	Arrival Time	Burst Time
P1	0	6
P2	1	4
P3	3	5
P4	5	3

   a. Draw the Gantt chart to illustrate the execution of these processes using Shortest Job First (SJF) preemptive and SJF non-preemptive algorithms separately. (6 mark)
   b. Calculate the average turnaround time, average waiting time and average response time for both algorithms separately. (6 mark)
   c. Which algorithm is most effective for the above scenario? Justify your answer. (5 mark)
   d. Differentiate preemptive and non-preemptive CPU scheduling. (8 mark)

3.
   a. Briefly explain deadlock in operating systems. (4 mark)
   b. Explain one (01) classic problem of synchronization in operating systems. (5 mark)
   c. Discuss the four (04) necessary conditions for deadlock. (8 mark)
   d. Compare and contrast paging and segmentation memory management schemes. (8 mark)

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