

Code: 9F00204

MCA II Semester Supplementary Examinations February 2014

OPERATING SYSTEMS

(For 2009, 2010, 2011 & 2012 admitted batches only)

Time: 3 hours

Max. Marks: 60

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Give a brief note on the operating system structure.
(b) Discuss five major categories of system calls in detail.
- 2 Consider the following set of processes, with the length of the CPU burst given in milliseconds:

Process	Burst Time	Priority
P ₁	10	3
P ₂	1	1
P ₃	2	3
P ₄	1	4
P ₅	5	2

The processes are assumed to have arrived in the order P₁, P₂, P₃, P₄ and P₅ all at time 0.

 - (a) Draw four Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: FCFS, SJF, non preemptive priority (a smaller priority number implies a high priority) and RR (quantum = 1).
 - (b) What are the turnaround and waiting times for each process for each of the scheduling algorithms in part a?
- 3 (a) Write the definition of swap () instruction. Explain the implementation of mutual exclusion using swap ().
(b) What is a semaphore? Give the solution to the dining-philosophers problem using semaphores and explain.
- 4 (a) What are the benefits of executing a program that is partially in memory?
(b) List the typical elements found in a page table entry. Define each element.
(c) Explain the purpose of translation look aside buffer.
- 5 (a) Discuss various directory implementation techniques in detail.
(b) Write a short note on free space management.
- 6 (a) Give a detailed note on RAID levels.
(b) What is stable storage? Explain how it is implemented.
- 7 (a) "A deadlocked state is an unsafe state. Not all unsafe states are deadlocks". Illustrate this with an example.
(b) Discuss resource allocation graph algorithm for deadlock avoidance.
- 8 (a) Make a comparison of various techniques for implementing an access matrix.
(b) What is the difference between a threat and an attack? Explain about the various security attacks.