Punjab Technical University
Master of Computer Application Examination

MCA 3rd Semester OPERATING SYSTEM 2006

Time: Three hours Maximum: 100 marks

PART A Answer ALL questions. (8 x 5 = 40 marks)

1. (a) Write short note on early operating system. List the differences between Multiprogramming and Time-sharing systems. Or
(b) Explain the architecture of an operating system.

2. (a) List out the various process states and briefly explain with a state diagram. Or
(b) What do you mean by processor scheduling? Explain the various levels of scheduling.

3. (a) Explain the methods of dead lock prevention and avoidance. Or
(b) Write briefly on fragmentation and swapping.

4. (a) Why disk scheduling is necessary? Explain the different seek optimization techniques.
Or
(b) Describe the different mechanisms used to protect a file.

5. (a) Explain the design principles of Unix
(b) Write a short note on Unix file system

6. (a) Write short notes on Demand Page Memory management. Or
(b) What is segmentation? State it usages.

7. (a) Explain the concepts involved in maintaining the file system security. Or
(b) Write short notes on double - buffering.

8. (a) List the various merits of treating directories and devices as file in Unix. Or
(b) Write short notes on I/O systems on Unix.

PART B Answer ALL questions. (5 x 12 = 60 marks)

9. (a) Explain the various functions of an operating system from a system programmer's view.
Or
(b) What is s'emaphore? Explain the application of semaphore.

10. (a) Compare preemptive and non-preemptive algorithm. Or
(b) Explain the Banker's algorithm for dead -lock avoidance.

11. (a) Explain any four page replacement algorithms. Or
(b) State about virtual memory concept.

12. (a) Describe the various disk scheduling algorithms. Or
(b) Give an overview of the various protection and access control mechanisms implemented in a file system.

13. (a) Discuss the file protection mechanisms incorporated in a Unix file system. Or
(b) List the calls in Unix for process management and write the function of each.