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M.C.A. DEGREE IV SEMESTER EXAMINATION MAY 2015

CAS 2203/2401 OPERATING SYSTEM

(Regular and Supplementary)

Time: 3 Hours

Maximum Marks: 50

PART A

(Answer *ALL* questions)

(15 × 2 = 30)

- I. (a) Why does the OS support dual mode of operation viz, user mode and monitor mode?
(b) Distinguish between multiprogramming and multiprocessing.
(c) Describe the different states of a process with a diagram.
- II. (a) What are the circumstances in which CPU scheduling decisions may take place?
(b) What is the effect of increasing the time quantum to an arbitrarily large value in round robin scheduling? Which CPU scheduling algorithm is provably optimal?
(c) What are the necessary conditions for a deadlock to occur?
- III. (a) Explain the difference between internal and external fragmentation.
(b) What is meant by thrashing?
(c) List the advantages of acyclic graph directories over tree structured directories.
- IV. (a) Why is it difficult to protect a system in which users are allowed to do their own I/O?
(b) Differentiate between block devices and character devices.
(c) Explain sequential and random access.
- V. (a) List the major reasons for building distributed systems.
(b) What is the importance of protection in operating system?
(c) Briefly explain on the different categories of viruses.

PART B

(5 × 4 = 20)

- VI. Explain briefly on the services provided by an operating system.
OR
- VII. What is a process control block? List its components.
- VIII. Define race condition. List the requirements that a solution to critical section problem must satisfy.
OR
- IX. Discuss the various approaches used for recovering from a deadlock once a deadlock is detected.
- X. Discuss the steps involved in handling a page fault, with a neat diagram.
OR
- XI. Explain any two methods for allocating disk space.
- XII. Explain any two disk scheduling algorithms with examples.
OR
- XIII. Explain the various issues involved in the design of a distributed system.
- XIV. Describe the access matrix model of implementing protection in operating systems.
OR
- XV. Write shorter notes on:
 - (i) Encryption
 - (ii) System Threats