

University of Swaziland

**Faculty of Science
Department of Computer Science**

Supplementary Examination, 2006

Title of Paper: Operating Systems

Course Number: CS442

Time Allowed: Three (3) hours

Instruction: Answer all questions. Every question carries the same maximum mark.

You are reminded that in assessing your work, account will be taken of the accuracy of the material, of the language used and the general quality of expression, together with the layout and presentation of your answer. Remember full answers will usually *define, explain and exemplify*.

Special Requirement:

Calculators are prohibited.

This examination paper should not be opened until permission has been granted by the invigilator.

Question 1.

- a) Describe a typical boot sequence on a PC.
- b) What information must be present in the partition data areas of the master boot record.
- c) What is the difference in function between the boot sector and the master boot record?

Question 2.

- a) Describe the WSClock memory management algorithm.
- b) The Least Recently Used memory management algorithm can be simulated in software, when the appropriate hardware is not available. What is this algorithm called, and how does it work?

Question 3.

- a) The medium of the ISO9660 file system has a size and a length. What two major considerations determined the values?
- b) How does the standard delete files?
- c) The date and time of recording are put into seven bytes of the directory entry of a file. What problem will occur, and when?
- d) No-one is satisfied with an international standard. What improvements have been made to the ISO9660 standard?

Question 4.

- a) Give the state diagram for the First Come, First Served scheduling algorithm - in adequate detail without supplying any further (textual) explanation.
- b) There are three environments worth distinguishing when considering scheduling. What are they, and what goals do they typically have?

Question 5.

Describe, with a diagram, the uncommitted dependency problem for three users A, B and C, in accessing a resource Z.

Question 6.

Round Robin schedulers normally maintain a list of all runnable processes, with each process occurring exactly once in the list. What would happen if a process occurred twice in the list? Can you think of any reason to allow this?

End of examination paper.