

University of Swaziland
Faculty of Science
Department of Computer Science
Final Examination, 2006/07

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) What is a disk partition?
- b) Why is partitioning necessary?
- c) Give an example, drawn from the practicals, of a typical Unix HDD partitioning scheme. Give the possible reasons for having each partition.
- d) Compare and contrast the Linux partitioning paradigm with that of Windows.
- e) What is a boot loader?

Question 2.

- a) Explain the problem arising between two processes in inconsistent analysis.
- b) What complications arise if three processes are involved in inconsistent analysis ?
- c) Explain the relationship between granularity and concurrency in database accesses.

Question 3.

One solution of the producer-consumer problem uses monitors.

- a) In one sentence, state the operation of a monitor.
- b) Give, in pseudo-code, the design of a monitor to control accesses to a database table.

Question 4.

- a) Explain the WS clock scheduling algorithm.
- b) Compare and contrast, perhaps in the form of a table, the page replacement algorithms discussed the course.

Question 5.

To what purposes is the Bochs simulator suited?

Question 6.

Explain the rôle of (software) device drivers in a typical operating system.

End of examination paper.