

University of Swaziland
Faculty of Science
Department of Computer Science

Supplementary Examination, 2006/07

Title of Paper: Computer Organisation II

Course Number: CS341

Time Allowed: Three (3) hours

Instruction: Answer all questions. Questions carry equal marks.

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) Evaluate the following arithmetic expression into decimal:

$$234_{16} + 234_{10} - 234_8$$

b) Evaluate the following reverse polish expression, where each number is a (decimal) digit:

$$xy+z*a+bc+d+ /$$

c) Convert into reverse polish the following infix expression (where, of course, operators have their usual precedence):

$$((m+n)*p+q)/(r+s+t)$$

d) An extract from a *ls* command is:

```
-rw-r----- 1 abampton abampton 45 sep 5 12:57 abampton
```

Give the Unix command to give user *cisco* write and execute access to the file.

e) What do the following commands do?

i) `passwd`

ii) `./kaffe`

iii) `telnet indlu.cs.uniswa.sz`

Question 2.

a) Give an annotated diagram showing the four or five logical areas of JVM memory.

b) Explain the JVM pipeline paradigm.

c) What is the major purpose of cache memory? And how do they work, in general?

Question 3.

Explain these terms as applied to the IA64:

a) EPIC

b) predication

c) speculative loads

Question 4.

List and explain at least six Unix commands.

Question 5.

Consider this program snippet, where the symbols have their conventional meanings, introduced in the course:

```
-----  
                ENT demo  
                EQU localVar          5  
  
demo           BIPUSH  localVar  
              BIPUSH  localVar  
              ISUB  
              ISTORE  localVar  
11:           IRETURN  0  
-----
```

An extract from the JVM opcode table is:

hex code	operand code	operand length in bytes
10	BIPUSH	1
9F	IF_ICMPEQ	2
15	ILOAD	1
AC	IRETURN	1
36	ISTORE	1
64	ISUB	none

Do the work of Pass 1 of an assembler and construct the program in hexadecimal and hence construct the symbol table.

6. Explain each tag of this html extract:

```
<body style="background-color: rgb(102, 204, 204); color: rgb(0, 0, 0);>  
<div style="text-align: center;">  
<h2>Computer science students' experimental site</h2>  
click <a href="cs%20Students%20home%20page.html">here</a> to enter it<br>  
<br>  
</div>  
</body>
```

End of examination paper.