NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCE
COMPUTER SCIENCE DEPARTMENT
AUGUST SUPPLEMENTS EXAMINATIONS 2004

SUBJECT: PROGRAMMING AND PROGRAM DESIGN
CODE: SCS1201

INSTRUCTION TO CANDIDATES

Answer all questions.

Time: 3 hours

SECTION A

QUESTION ONE

A transaction file, IF, contains records of students who did not confirm their registration. a master file, STDMST, contains records of students who are to be confirmed as bona fide students of the college. Both files are sorted in student number order.

The processing required is as follows:-

i) Read a record from the IF, look for a match on the STDMST.
ii) If a match is found, delete the matched record from the STDMST, but if no match is found, ignore, and read the next record of the IF
iii) Repeat the steps (i) and (ii) until the end of file of the IF.

a) Write the pseudo-code to do the processing required. [10]
b) Write a C program to do what you have outline in your pseudo-code. [10]

QUESTION TWO

Draw a flow chart representation of the following: -

a) an IF-THEN-ELSE selection. [6]

b) a WHLE-DO loop. [6]

c) a loop within a loop (nested loop) [8]

QUESTION THREE

Draw a physical JSP data structure diagram to depict the following data in a file: -

a) a record of a book. A book consists of one preface, several chapters and an index. Each chapter is made up of several sections, and each section consists of many pages. A page can be a text page, or a picture page or a table page. [10]

QUESTION FOUR

An indigenous businessperson has hired a rat-catcher in his shop. At 1730 hours, the rat catcher sets a number of rat traps around the shop. The following morning at 0600 hours, he walks around the shop, checking which traps, and to clear the traps in every trap that caught a rat. He also would count the number of traps that would have been caught.

Draw a Nassi-Schneidermann diagram to show the carrying out of this activity. [20]

QUESTION FIVE

Below are instances of loops (iterations) in psedo-code. For each instance, state whether the loop will be executed, and what result would be if it does execute. If the loop won't execute, state why.

a)

$t = \phi$
DO
$t = t + 1$
display t
WHILE $T \prec 12$

[5]

b)

$n = \phi$
while $n \succ \phi$ *DO*
$n = n + 1$
Endwhile

[5]

c)

$x = 7$
While $x \succ \phi$ *DO*
display $(x * x)$
endwhile

[5]

d)

$t = \phi$
Re *peat*
$t = t + 1$
display t
NTIL $T \succ 2\phi$

[5]

END OF QUESTION PAPER