



(National Council for Vocational Awards)



Computer Programming C20013

Theory Examination 2003

Duration: Two Hours

INSTRUCTIONS TO CANDIDATES:

*Answer any **three** questions*

All questions carry equal marks

Return this exam/answer paper when finished

Extra paper is available from the exam supervisor if required

This written exam counts as 40% of the total module

Marking Scheme

Question 1. Total 40 marks.

(a) This program contains 5 errors that will stop it from compiling. List the errors. **20 marks**

```
#include <stdio.H>
main ()
{
  int looper;
  printf ("These are the first 10 squared numbers:\n");
  loopy = 1;
  while (looper <= 10)
  {
    printf ("%d\n", looper * looper)
    looper++;
  }
}
```

1	4 marks
2	4 marks
3	4 marks
4	4 marks
5	4 marks

(b) What is a variable used for? **10 marks**

Unsatisfactory: 0; Unclear: 6, 7; Correct: 10;

(c) What is the difference between a character and a string variable? **10 marks**

Unsatisfactory: 0; Unclear: 6, 7; Correct: 10;

Question 2. Total 40 marks.

(a) What type of numeric data should not be stored in the **int** data type? What data type should be used instead? **10 marks**

Unsatisfactory: 0; Unclear: 6, 7; Correct: 10;

(b) Write the general form of the **if** statement: **10 marks**

Unsatisfactory: 0; Unclear: 6, 7; Correct: 10;

(c) Write a C program containing a loop that writes out the odd numbers between 9 and 99 **20 marks**

Unsatisfactory: 0-9; Imperfect: 10-19; Largely Correct: 20-30;

Question 3. Total 40 marks.

(a) Draw a diagram to represent the state of the **numbers** array after this program finishes. **30 marks**

```
#include <stdio.h>
main ()
{
  int numbers[9], loopvar;
  loopvar = 0;
  while (loopvar <= 9)
  {
    numbers[loopvar] = 100 - (loopvar * loopvar);
    if (loopvar == 5)
    {
      numbers[loopvar] = 0;
    }
    loopvar++;
  }
}
```

Draw your diagram here:

Unsatisfactory: 0-9; Imperfect: 10-19; Largely Correct: 20-30;

(b) What numeric screen output is generated by this program line: **10 marks**

```
printf ("%d\n", 'H'+ 'w');
```

Unsatisfactory: 0; Unclear: 6, 7; Correct: 10;

Question 4. Total 40 marks.

(a) Write a C loop to read in an array of 20 numeric variables; then write another loop to write out the contents of the array in reverse order. Also write out the total sum of all the values in the array. **30 marks**

Unsatisfactory: 0-9; Imperfect: 10-19; Largely Correct: 20-30;

(b) The control variable for a **while** loop should appear in a program not less than four times. List those times. **10 marks**

1	2.5 marks
2	2.5 marks
3	2.5 marks
4	2.5 marks

Figure 1. The ASCII table.

			032 SP	033 !	034 "	035 #	
036 \$	37.00%		038 &	039 '	040 (041)	
042 *		043 +	044 ,	045 -	046 .	047 /	
048 0		049 1	050 2	051 3	052 4	053 5	
054 6		055 7	056 8	057 9	058 :	059 ;	
060 <		061 =	062 >	063 ?	064 @	065 A	
066 B		067 C	068 D	069 E	070 F	071 G	
072 H		073 I	074 J	075 K	076 L	077 M	
078 N		079 O	080 P	081 Q	082 R	083 S	
084 T		085 U	086 V	087 W	088 X	089 Y	
090 Z		091 [092 \	093]	094 ^	095 _	
096 `		097 a	098 b	099 c	100 d	101 e	
102 f		103 g	104 h	105 i	106 j	107 k	
108 l		109 m	110 n	111 o	112 p	113 q	
114 r		115 s	116 t	117 u	118 v	119 w	
120 x		121 y	122 z	123 {	124	125 }	
126 ~		127					
Printable alphanumeric and punctuation characters used in normal document text							

