



(National Council for Vocational Awards)



Computer Programming C20013

Theory Examination 2006

Duration: Two Hours

INSTRUCTIONS TO CANDIDATES:

*Answer any **three** questions*

All questions carry equal marks

Answer the questions using the spaces in this exam booklet

Return this question & answer paper when finished

This written exam counts as 40% of the total module

NAME (PRINT): _____

PPS NUMBER: _____

DATE: _____

Question 1. Total 40 marks.

(a) This program contains 4 errors that will stop it from compiling. List the errors. **20 marks**

```
include <stdio.h>
int loopy;
main ()
{
  looper = 1;
  printf ("+-----+\n");
  while (loopy <= 8)
  {
    printf ("|          |\n");
    loopy++;
  }
  printf ("+-----+\n");
}
```

1	
2	
3	
4	

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

(c) What is the difference between an integer (**int**) and a float (**float**) variable? Give a sample of each type of data. **10 marks**

Question 2. Total 40 marks.

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

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

(c) The following C code will compile and run but will not generate the desired output. Why?

20 marks

```
#include <stdio.h>
// A sample program.
// This program should write out the letters a..z
// of the alphabet, one on each line.
int controlvar;
char alpha;
main ()
{
    controlvar = 97;
    while (controlvar <= 122);
    {
        // This line converts and then writes the character
        printf ("%c\n", controlvar);
        controlvar++;
    }
}
```

Question 3. Total 40 marks.

(a) Indicate the values in each of the variables **a**, **b** and **c** after this program finishes:

30 marks

```
#include <stdio.h>
main ()
{
  int a, b, c, lv;
  lv = 1;
  // Don't loop when lv is ten
  while (lv != 10)
  {
    a = lv;
    b = lv * 2;
    // Add 1 to lv each time
    lv++;
  }
  c = a * b;
}
```

<i>Variable</i>	<i>Value</i>
a	
b	
c	

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

```
printf ("%c%c%c%c%c\n%c%c%c%c%c%c\n",
        68, 111, 110, 39, 116, 80, 97, 110, 105, 99, 33);
```

Question 4. Total 40 marks.

(a) Write a C loop to read in an array of 30 numeric variables and then write out the total (sum) and the average of the numbers which have been read in.

30 marks

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(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	
3	
4	

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						

