



UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: DCT1083
COURSE	: PROGRAMMING FUNDAMENTALS
SEMESTER/SESSION	: 1 – 2021/2022 & 2022/2023
DURATION	: 3 HOURS

Instructions:

1. This booklet contains 5 questions. Answer **ALL** questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise your hands and ask the invigilator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO
THIS BOOKLET CONTAINS 5 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

- a) Named constant is a memory location whose content can't change during execution. The syntax to declare a named constant is:

```
const datatype identifier = value;
```

Write **FOUR (4)** constant declaration in C++. By using `const`.

(4 marks)

- b) Write **FOUR (4)** variable declaration use `int`, `double`, `float` and `char`.

(4 marks)

- c) Write **TWO (2)** syntax for each of an input (read) using `cin` and output (display) using `cout`.

(4 marks)

- d) Based on the declaration given below, write **TWO (2)** output for `setprecision` that set to 2 and `setw` that set to 5.

```
int x = 19;
double z = 123.45
```

(4 marks)

QUESTION 2

- a) A student's letter grade is calculated according to the following schedule shows in Table 1, write the C++ code that accepts a student's numerical grade, converts the numerical grade to an equivalent letter grade, and displays the letter grade. The code should write using the statement below

Table 1

Numerical grade	Letter grade
90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

- i) `if` statement (5 marks)
- ii) `if..else` statements (5 marks)
- b) By giving example, discuss the statements that should be included when using `switch`. (3 marks)

QUESTION 3

- a) Given output at figure 1 below.

```

*
**
***
****
*****
*****
*****
*****
*****
*****
*****
*****

```

Figure 1

By using `for` statement write the C++ code to produce the output above.

(7 marks)

- b) Distinguish between `while` and `do while` by writing a C++ code to show the looping where the output is 11 for `while` and 16 for `do while`. The counter should count by 5.

(6 marks)

QUESTION 4

- a) Write a C++ function prototype and function definition to display name and age. Example: (*sample output*).

```

Name is Ahmad
Age is 23

```

(7 marks)

- b) Write a C++ function prototype and function definition that returns `total` when two numbers are added.

(6 marks)

- c) Write a C++ code that declares `numbers` an array of 20 integers. By using `for` loop. *Example (sample output)*

```
Number 012345678910111213141516171819
```

- i) initialize elements of array `numbers` from user prompt. (4 marks)
- ii) output each array element's value. (2 marks)
- d) Declare a char array `name1` and initialize it to the first word of your lecturer's name. Declare another char array `name2` and initialize it to the second word of your lecturer's name where each letter name is enclosed in single quote and be treated as elements. Put a null character `'\0'` to mark the end of string. Display both character arrays. (4 marks)
- e) Express a C++ coding for a given elements of an array named `val` below. Display explicit elements start a new line for each row.

```
val[3][4]={8,16,9,52,3,15,27,6,14,25,2,10}
```

(7 marks)

QUESTION 5

- a) Write a program that: *(Example output)*

```
Address of var[1]=0x7ffd75ac6df0
Value of var[1]=10
Address of var[2]=0x7ffd75ac6df4
Value of var[2]=15
```

- i) Declare and initialize a constant variable named `MAX` to specify array size 3. (1 mark)
- ii) Declare and initialize an array named `var` with the elements 5,10 and 15. The size of array `var` as in question a(i). (1 mark)
- iii) Declare a pointer variable named `ptr` and initialize it to array `var`. (2 marks)

- iv) By using a `for` loop, display the address and values of each elements of the array `var`.
(3 marks)
- b) Write a C++ code that : (*Example output*)
- i) Declare a variable named `var` and initialize it to 20.
(2 marks)
- ii) Declare a pointer variable named `ip` and initialize it to the address of the variable `var`.
(2 marks)
- iii) Print the value of the variable `var`.
(2 marks)
- iv) Print the address and value of a pointer variable name `ip`.
(4 marks)
- c) Write a C++ code that use `getline` function to put a line of input "*This is a test*". When the user presses the *Enter* key, another line of "*This is a test*" will be displayed together with *END OF OUTPUT*. Set the array of character to **80**.
(7 marks)

-----End of questions -----

