

**UNIVERSITY COLLEGE TATI (UCTATI)****FINAL EXAMINATION QUESTION BOOKLET**

COURSE CODE	: DCT 1083
COURSE	: PROGRAMMING FUNDAMENTAL
SEMESTER/SESSION	: 2-2023/2024
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**

## PROGRAMMING FUNDAMENTAL (DCT 1083)

## QUESTION 1

a) Write the output for the following C++ program in Figure 1 when input is 80.

(3 Marks)

```
#include <iostream>
using namespace std;
int main() {
    int score;

    cout << "Enter the score: ";
    cin >> score;

    if (score >= 0 && score <= 100)
        cout << "Entered score: " << score;
    else
        cout << "Invalid";

    return 0;
}
```

Figure 1

b) Write an algorithm (Flowchart or Pseudocode) and C++ program that reads a body temperature in celsius and display status based on following range (Table 1).

Table 1

Temperature (°C)	Status
<35.0	Hypothermia
35.1 - 37.5	Normal
37.6 - 39.9	Fever
>=40.0	Hyperpyrexia

i) Algorithm

(8 Marks)

ii) C++ program

(10 Marks)

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**QUESTION 2**

- a) Write the output for the following C++ program fragment in Figure 2 (4 marks)

```
mult=3;
for (int i = 1; i <= 5; ++i) {
    cout<<mult<<"x"<<i<<"="<<(mult*i)<<endl;
}
```

Figure 2

- b) Write a C++ program fragment to print output as follows (use loops):
- i) 1 2 3 4 5 6 7 8 9 10 (4 marks)
  - ii) 10 8 6 4 2 (4 marks)
- c) Write a C++ program that uses a loop to input two integers (m and n) and display the result of m raised to the power of n ( $m^n$ ). Here is sample run (Figure 3). (9 marks)

```
Please enter two integers:
3 <enter>
4 <enter>
3 power of 4 is 81
```

Figure 3

**QUESTION 3**

- a) Consider the following C++ function in Figure 4.

```
int lantun(){
    return -999;
}

void dalamJulat(int kod){
    if(kod==0)
        cout<<"Di luar Julat";
    else
        cout<<"Di dalam Julat";
}
```

Figure 4

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Determine the validity of the given function calls. Provide reasons for invalid calls, and for valid ones, either write the output or specify 'nothing' if no output is produced.

- i) `lantun();` (3 marks)
  - ii) `cout<< lantun();` (3 marks)
  - iii) `dalamJulat();` (3 marks)
  - iv) `dalamJulat(2);` (3 marks)
- b) Write function headers for the following functions:
- i) Printing the calendar for a month, given the month and year. (3 marks)
  - ii) Testing whether a number is even, and returning true if it is. (3 marks)

**QUESTION 4**

- a) Write a function named `terbesar` that takes two integers as input. The function should then return the larger of the two integers. (5 marks)
- b) Write a test program (main function) that prompts the user to enter two integers. The program should then print out the larger value between the two by utilizing the function defined in Question 4 a). (6 marks)

**QUESTION 5**

- a) Explain the concept of a pointer in C++. How does it differ from a regular variable? (5 marks)
- b) Declare `m` to be type of integer pointer and `n` to type of char pointer. (4 marks)
- c) Explain `new` and `delete` operators (4 marks)
- d) How do you allocate and deallocate memory using `new` and `delete` operators? (4 marks)

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- e) Assume that the content for *p* and *num* after the following statements are as follows (Figure 5).

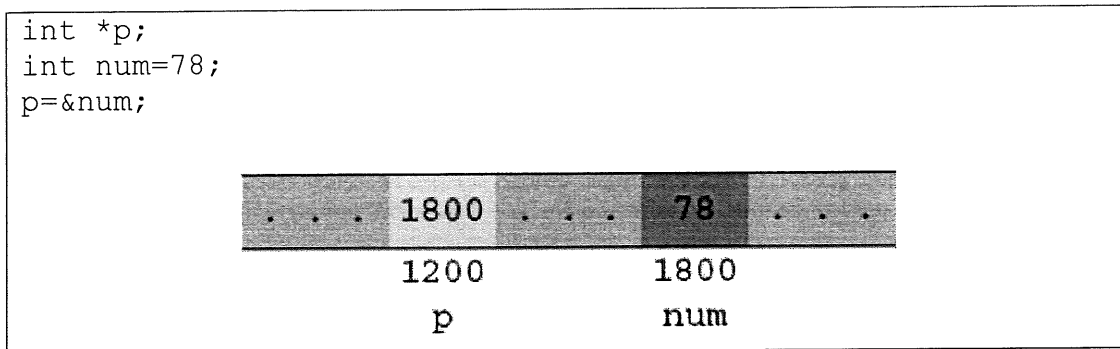


Figure 5

Show output of the following code.

- i) `cout<<num;` (2 marks)
- ii) `cout<<&num;` (2 marks)
- iii) `cout<<p;` (2 marks)
- iv) `cout<<&p;` (2 marks)
- v) `cout<<*p;` (2 marks)
- vi) `cout<<*p+num;` (2 marks)

-----End of question-----

