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University of Ruhuna- Faculty of Technology

Bachelor of Engineering Technology Honours Degree

Level 1 (Semester II) Examination, June/July 2026

Course Unit: TMS1223 Computer Programming Techniques (Theory) **Duration: 2 hours**

INSTRUCTIONS TO CANDIDATES:

- This paper contains **04 QUESTIONS** in **06 PAGES** including this sheet.
- **ANSWER ALL QUESTIONS.** All questions carry equal marks.
- This is a closed book examination.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- All Examinations are conducted under the rules and regulations of the University.

Q1.

a) Explain the difference between **a compiler and an interpreter** in programming languages.

(4 marks)

b) List **three (03)** basic data types and describe, each of them with a suitable example.

(6 marks)

c) Understand the following C program (Code 1) and answer the given questions.

```
#include <stdio.h>

// This program calculates the average of three marks

int main()
{
   int mark1 = 75, mark2 = 80, mark3 = 65;
   float average;

   average = (mark1 + mark2 + mark3) / 3.0;

   printf("Average marks = %.2f", average);

   return 0;
}
```

Code 1

Identify and state examples for the following components in the above code.

i. Two **variable names**
ii. Two **functions**
iii. Two **keywords**
iv. The **return data type** of the `main()` function
v. **Arithmetic operators**
vi. A **header file**
vii. A **format specifier**
viii. A **comment**

(4 marks)

d) Write a C program that reads an integer from the user and checks whether it is **a multiple of 3 or not**. Display an appropriate message based on the result.

(11 marks)

Q2.

a) List any three (03) loop structures available in C programming.

(3 Marks)

b) Select the most suitable jump statement in C for each of the following situations.

i. A video player skips the current video and moves to the next video in a playlist.

ii. A search operation stops immediately after finding the required record.

iii. When an error occurs, the program transfers control to an error handling section.

(6 marks)

c) Analyze the ***code 2*** below and answer the questions.

```
#include <stdio.h>

int main() {
int i;

for(i = 1; i <= 10; i++) {
if(i == 5) {
continue;
}
printf("%d ", i);
}
return 0;
}
```

Code 2

i. Write the output of the program.

ii. Explain the purpose of the `continue` statement in this program.

iii. What will happen if the `continue` statement is replaced with `break`?

(10 marks)

d) A programmer needs to display the names of 50 students stored in a system.

i. Which loop structure is most suitable for this task?

ii. Give two (02) reasons for your answer.

(6 marks)

Q3.

a) i. Define an array in C programming.

ii. Differentiate between one-dimensional arrays and two-dimensional arrays.

(4 marks)

b) Consider the following array declaration:

```
int marks[5] = {45, 67, 80, 72, 90};
```

Answer the following questions.

i. What is the size of the array?

ii. What is the first (01) element of the array?

iii. What is the last element of the array?

iv. Write the index of the value 80.

(4 marks)

c) Analyze the following code ***(Code 3)*** and answer the questions below.

```
#include <stdio.h>

int main() {

int a[5] = {2, 4, 6, 8, 10};
int i, sum = 0

for(i = 0; i < 5; i++) {
sum = sum + a[i];
}
printf("Sum = %d" sum);
return 0;
}
```

Code 3

i. Explain the purpose of the for loop in the program.

ii. Identify the two (02) errors of the above program

iii. After fixing those errors, write the final output of the program.

iv. What is the value of **Sum** after the third iteration?

(12 marks)

d) Consider the following code segment.

```
int data[3] = {5, 10, 15};
printf("%d", data[3]);
```

i. Explain what happens when this code is executed.

ii. Write the correct statement to print the last element properly.

(5 marks)

Q4.

a)

i. What is a function in C programming?

ii. State two (02) advantages of using functions.

(4 marks)

b)

i. Define a pointer in C programming.

ii. Write a simple pointer declaration and initialization example.

(4 marks)

c) Consider the following function prototype.

```
int findMax(int a, int b);
```

i. Identify and state the,

I. Function name
II. Return type
III. Parameters

(3 marks)

ii.Explain the purpose of function prototypes in C programming.

(2 marks)

d)Write down the output of the program given in ***code 4*** below.

```
#include <stdio.h>

void display(int *num) {
printf("%d", *num);
}

int main() {

int x = 25;

display(&x);

return 0;
}
```

Code 4

i. What is the output of the program?

ii. What does the symbol **&x** represent?

iii. What does the symbol ***num** represent inside the function?

(12 marks)

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