

REGENT UNIVERSITY
COLLEGE OF SCIENCE AND TECHNOLOGY



EXAMINATION PAPER

FIRST SEMESTER EXAMINATIONS

LEVEL 100 APRIL 2008

**COURSE: PRINCIPLES OF PROGRAMMING
(USING C)**

SICS 151

TIME: TWO AND HALF HOURS

LECTURER: DAVID BOTWE

Please Read ALL Instructions

Section A [30 Marks]

Attempt all Questions

1. In C programs, comments are used to include header files containing information about C libraries. True / False (2 marks)
2. In C, a statement always ends with a semicolon(;). True / False (2 marks)
3. Which of the following are valid variable names? (2 marks)
 - a. first.name
 - b. amount
 - c. my Name
 - d. level300
4. Which of the following are valid statements? (3 marks)
 - a. int k = 5;
 - b. double score = 5.0;
 - c. float totalScore;
 - d. char name = "David";
5. What is the value of the following arithmetic expressions? (2 marks)
 - a. $(10 - 6) * 8 - 5 = ?$
 - b. $20 + 18 \% 5 = ?$
6. Given the following variable declarations, state whether the statements (a to e) are true or false
int x = 5;
int y = 8;
 - a. $x * y == 10$
 - b. $(x > y) \ \&\& \ (y < 10)$
 - c. $(x < 3) \ || \ (x < 10)$
 - d. $(x > 3) \ \&\& \ (x < 10)$
 - e. $(x - y) == (y - x)$

7. What does the following code print to the screen? (2 marks)

```
int scores[] = {2, 4, 6, 8, 10};
int sum = 0;
int i;
for (i=0; i<5; i++){
    sum += scores[i];
}
printf("%d", sum);
```

8. What is the output of the following code? (2 marks)

```
char grade = 'D';
switch (grade) {
case 'A':
    printf("Excellent.");
    break;
case 'B':
    printf("Very Good.");
    break;
case 'C':
    printf("Good.");
    break;
default:
    printf("Average.");
}
```

9. Write a for loop that calculates the sum of odd numbers in the range 1 to 100.

(4 marks)

10. What is the output for the following segment of the code?
(6 marks)

```
a) int k = 10;
   while (k < 10) {
       k += 2;
       printf("%d", k);
   }
```

```
b) int k = 10;
   while (k < 20) {
       k += 2;
       printf("%d", k);
   }
```

Section B [30 Marks]

Attempt any THREE questions from this section

Question 1

The body mass index (BMI) of a person is calculated as weight in kilograms divided by height in meters squared (i.e $BMI = \text{weight (kg)} / [\text{height (m)}]^2$). Write a program that reads from the keyboard, weight in kilograms, height in meters and calculate the BMI and write the output to the screen.

Question 2

Write a program to find the average of an array of floating point scores as follows:

- The program should first read the the number of scores from the keyboard.
- Declare an array of scores and read the scores from the keyboard into the array
- Calculate the sum and average
- Print out the average.

(10 marks)

Question 3

Write a program that reads a person's BMI from the keyboard and displays the weight status to the screen using the following scale:

BMI	Weight Status
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
30.0 and Above	Obese

(10 marks)

Question 4

Write a program that manipulates strings as follows:

- Declare a string variable containing a maximum of 20 characters
- Initialize the string variable to contain the text "Delinquent Taxpayer".
- Declare another string variable containing a maximum of 20 characters
- Copy the content first string variable to the second string variable
- Print out the contents of the two string variables to the screen.

(10 marks)

END OF QUESTIONS