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

b)
```c
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 = weight (kg) / $[height (m)]^2$). 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:
   a) The program should first read the the number of scores from the keyboard.
   b) Declare an array of scores and read the scores from the keyboard into the array
   c) Calculate the sum and average
   d) 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:
   a) Declare a string variable containing a maximum of 20 characters
   b) Initialize the string variable to contain the text " Delinquent Taxpayer".
   c) Declare another string variable containing a maximum of 20 characters
   d) Copy the content first string variable to the second string variable
   e) Print out the contents of the two string variables to the screen.

(10 marks)

END OF QUESTIONS