RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Applied Sciences
First Year - Semester II Examination – November/December 2016

COM 1407 – COMPUTER PROGRAMMING

Time: Three (3) hours

Answer all questions
All the answers must be based on C programming language.

1.

a. C programs typically go through six phases to be executed. Such phases are compile, link, edit, preprocess, load and execute. Briefly describe each phase by specifying the correct order of 6 phases. (5 Marks)

b. Compare the following pairs of terms.

i. Compile –time error and run- time error (2 Marks)
ii. High-level language and low level language (2 Marks)

c. Explain why C is often called a "Middle Level" programming language. (3 Marks)

d. Give examples for basic data types. (3 Marks)

2.

a. Write a print statement to display x value as 2.34, if the value of x is 2.3456. (2 Marks)

b. Correct and rewrite the following program segment in a properly indented way:

```
#include<stdio.h>
int main()
{int i, a[ 5 ];
for (i = 0; i < 5; ++i ) { scanf( "%d\t%d\n", a[i]);
if(a[i]>5
printf( "%d\t%d\n", a[i].x, a[i].y );} return 0;
}
```

(2 Marks)

c. Write a program that produces following output

1.	0	0
2.	1	2
3.	4	4
4.	9	6
5.	16	8
6.	25	10

(6 Marks)

3.

a. Give the function header (only) for each of the following functions:

i. Function "average" that takes two integer arguments , section1, section2, and returns floating point result. (2 Marks)

ii. Function "displaysum" that takes two floating point arguments and does not return a value (when function is called display sum of two numbers. (2 Marks)

b. Find the errors in each of the following program segments and explain how the errorscan be corrected.

i.

```
int g( void )
{
printf( "Inside function g\n" );
    int h( void )
    {
    printf( "Inside function h\n" );
    }
}
```

(2 Marks)

ii.

```
void product( void )
{
    int a, b, c, result;
    printf( "Enter three integers: " )
    scanf( "%d%d%d", &a, &b, &c );
    result = a * b * c;
    printf( "Result is %d", result );
    return result;
}
```

(2 Marks)

c. Find the output of the following program when user enter 3 as requested input:

i.

```
#include <stdio.h>
void cubeByReference( int *nPtr );
int main( void )
```

```
{
    int number ;
    scanf("%d",&number);
    number+=2;
    printf( " %d\n", number );
    cubeByReference( &number );
    printf( "\n  %d\n", number );
}
void cubeByReference( int *nPtr )
{
    *nPtr = *nPtr * *nPtr * *nPtr;
}
```

(2 Marks)

ii. What would be the output of the following program:

```
#include <stdio.h>
int main( void )
{
    int b[] = { 10, 20, 30, 40 };
    int *bPtr;
    int i;
    bPtr=b;
    for (i=0;i<4;i++)
    {       bPtr++;
            printf("%d\t",*bPtr);

    }
    return 0;
}
```

(2 Marks)

iii. Describe the following built-in string functions using suitable examples: strcpy(),strcat(). (3Marks)

4.

a. Given an array "score" containing single player's scores obtained in 50 different cricket matches. Read any player score and check how many times that player has taken more than 50 runs. Write another function to check the minimum score and maximum score. (10 Marks)

b. A company produces five verities of biscuits named as "A", "B", "C", "D" and "E". Company has conducted a survey to find the favorite biscuit. The survey data are available in an array called "products" as shown below: (Responses from 50 responded were recorded)

responded	0	1	2	3	4	.....	50
products	"A"	"B"	"C"	"A"	"B"	.....	"B"

i. Write a program to read and record favorite biscuit of responses. (3 Marks)

ii. Find the most popular biscuit among the sample population and display how many persons like that biscuit. (7 Marks)

5.

a. What are structures in C. (2 Marks)

b. Suppose you are asked to develop a C program for a company to store their product data in a computer media. Define a suitable structure for product which includes product-number, description, product-year and product-cost. (5 Marks)

c. Write a function to read data into a variable of above declared structure type. (4 Marks)

d. Declare an array of structures to store 10 product items. (4 Marks)

e. Write a function to print the product-numbers of all products stored in the array declared in above d. (5 Marks)

f. Write a function to print the cost of product from the above array when user entered the product-number. (5 Marks)

6.

a. Write a statement to open a text file. (1 Marks)

b. Write a statement to open a binary file. (1 Marks)

c. Write a function to create a formatted text file to store product data declared in above question 5. (3 Marks)

d. Write a function to store product data of 10 items. (5 Marks)

e. Write a function to display average cost of all products stored in a file. (5 Marks)

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