The Open University of Sri Lanka
Faculty of Natural Sciences
B.Sc Degree Programme

Department	: Computer Science
Level	: 03
Name of the Examination	: Final Examination
Course Code and Title	: **CSU3200 Introduction to Computer Programming**
Academic Year	: 2019/2020
Date	: 11/01/2020
Time	: 1.30 p.m.-3.30 p.m.
Duration	: Two (02) Hours
Index number	:

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **06** questions in **04** pages.
3. Answer any **04** questions only. All questions carry equal marks.
4. Answer for each question should commence from a new page.
5. Draw fully labelled diagrams where necessary
5. Relevant log tables are provided where necessary.
6. Having any unauthorized documents/ mobile phones in your possession is a Punishable offense
7. Use blue or black ink to answer the questions.
8. Circle the number of the questions you answered in the front cover of your Answer script.
9. Clearly state your index number in your answer script

ANSWER FOUR QUESTIONS ONLY.

QUESTION 01

a) Briefly describe "**Rules of syntax**" and "**Rules of Semantics**".

b) The following is an expression of a C program. What is the value of '**X**' after this expression is executed?

X = 6 + 4 (6 – 2) / 4 + 4 * 7;

c) Briefly explain the following generations of programming languages.
   1) Machine language
   2) Assembly language

d) What is the output of the following program?

```
#include<stdio.h>
int main()
{
   int j=6;
   while (j >=0)
    {
      if (j==4) {
         j--;
         continue;
      }
      printf("Value of j: %d\n",j);
      j--;
   }
   return 0;
}
```

QUESTION 02

a) What are the **three** classes of data types supported by the C language?
b) Describe "**Library functions**" and "**User defined functions**".
c) What are the **two** methods of constant declaration in C language, briefly explain with an example.
d) Write a complete C program to read your **name** and **age** then print those as follows.

E.g. My name is Sunil
     My age is 25

QUESTION 03

a) What are the **three** main types of statements in C language for selective operations?
b) What are **two dimensional** arrays? Briefly explain it with an example.
c) Describe the difference in between **Structures** and **Unions**.
d) Write a complete C program to print the following design on your screen by using a nested '**for**' loop.

```
*
**
***
****
*****
```

QUESTION 04

a) State the meaning of each backslash codes mention below.

1) \a
2) \r
3) \v
4) \\
5) \"

b) If the variable **x=16** and variable **y=3**, write the values of **x**, **y** and **z** after the execution of each of the following statements separately.

1) z = x++ / - -y;
2) z = - -x + y++;
3) z = ++x - ++y;
4) z = y++ * x++;

c) What are the **two** types of parameter passing methods in C language?

d) Give line by line explanation for the following program.

```
#include <stdio.h>
int main ()
{
    int t;
    for(t=0; t < 100; t++)
    {
        printf("%d ", t);
        if(t == 10)
        break;
    }
getch();
return 0;
}
```

QUESTION 05

a) What is the main difference in between "**auto**" and "**static**" storage classes?

b) Suppose you want to store data about students in a University. You want to store **student's name** (a string), **address** (a string), **department** (a string) and **age** (an integer). Create a structure to hold the above information.

c) State the meaning of each format modifiers mention below.

1) % c
2) % h
3) % u
4) % x

d) Convert the following **switch** statement into nested **if/else** statements.

```
switch(grade) {
   case 'A' :
      printf("Excellent!\n" );
      break;
   case 'B' :
   case 'C' :
      printf("Well done\n" );
      break;
   case 'D' :
      printf("You passed\n" );
      break;
   case 'F' :
      printf("Better try again\n" );
      break;
   default :
      printf("Invalid grade\n" );
}
```

QUESTION 06

a) State the main difference between a **variable** and a **pointer**.

b) Convert the following statement into **if else** statement.

R = (P != Q) ? (P * Q) : (P / Q);

c) Describe the purpose of each of the following string manipulation functions.

1) strcpy(s1,s2)
2) strcat(s1,s2)
3) strlen(s1)

d) What would be the output of the following program?

```
int main( )
{
char arr[ ] = "Bamboozled" ;
int len1, len2 ;
len1 = strlen ( arr ) ;
len2 = strlen ( "Humpty Dumpty" ) ;
printf("\nstring = %s length = %d", arr, len1 ) ;
printf("\nstring = %s length = %d","Humpty Dumpty",len2);
}
```