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

Department	**: Computer Science**
Level	**: 03**
Name of the Examination	**: Final Examination (1st Semester)**
Course Title and - Code	**: Introduction to Computer Programming - CSU3200**
Academic Year	**: 2021/2022**
Date	**: 17.10.2022**
Time	**: 1.30 pm -3.30 pm**
Duration	**: Two hours only**

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **(06)** questions in **(07)** 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.
6. Involvement in any activity that is considered as an exam offense will lead to punishment
7. Use blue or black ink to answer the questions.
8. Clearly state your index number in your answer script

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1. Question No. 1

1.1. Fill in the blanks with suitable words given below.

and, sign, case, main(), sum(), three, size, syntax, union, array, prefix, or, two, extension, structure, not, void, postfix, four, long

1. int, char, float, double and ..... are five fundamental (basic) data types in C language.
2. In a program, spelling and grammatical errors are considered as ..... errors.
3. C program starts to execute from the beginning of the ..... function.
4. Increment/Decrement operator in C language, known as unary operator, can be used as ..... or ..... operator.
5. C is ..... sensitive language.
6. There are ..... dynamic memory allocation functions in C.

7. Both ..... and ..... modifiers can be used with int data type.
8. The three logical operators in C language are known as....., ..., ...
9. A file name consists of two parts. File name and the .....
10. A ..... is similar to a ..... , but it shares same memory space

(15 Marks)

1.2 Write function prototypes that match with the following descriptions using C language rules.

i. sumFunction() takes two integer arguments and returns an integer value

ii. swapFunction() takes two integer arguments and returns nothing

iii. floFunction() takes one float type argument and returns float type value

(3 Marks)

1.3 Write a complete C program to find the volume of a cylinder. Height and radius of cylinder should be input from the keyboard. Your answer should be truncated to two (2) decimal places.

(Hint: Volume of a cylinder = $pi*r^2*h$; pi – 3.14 (constant), r – radius, h - height)

(7 Marks)

2. Question No. 2

2.1. What are the four string manipulation functions?

(4 Marks)

2.2 Write down the four storage classes and mention the location where it stores the value of the variable. (8 Marks)

2.3 What will be the output of the following programs?

i.
```
#include <stdio.h>
int main ()
{
  char string [] = "Hello world!";
  puts (string);
}
```

ii. Assume you enter 256, when you run the program

```
#include<stdio.h>

 int main()
 {
 int num;
```

```
printf("Enter the Number : ");
scanf("%d",&num);

 (num %2 ==0) ? printf("Division is easy") : printf("Division is not easy");

}
```

(4 Marks)

2.4
```
#include <stdio.h>

int main(){
  FILE *filePointer;

  if (filePointer = fopen("D:myfile1.txt", "a"))
  {
    fputc('X', filePointer);
  }

  fclose(filePointer);

  return 0;

  }
```

Considering the above program iii, answer the following questions.

i. What is the name of the file used in this program and what type of file is it?
ii. Where is the file located?
iii. What will happen with fopen() and fclose() functions?
iv. What is the file opening mode?
v. What will happen when the file open with that mode?
vi. What is the output of the program?

(9 Marks)

3. Question No. 3

3.1. What are the three classes of data types used in C language?

(3 Marks)

3.2 What are the three input functions and three output functions in C?

(3 Marks)

3.3 What will be the output of the following programs?

i.
```
#include<stdio.h>
 int main()
 {
        goto skip_point;
        printf("This part was skipped.\n");
        skip_point:
        printf("Hi there!\n");
 }
```

ii.

```
#include <stdio.h>
int main()
{
   int a = 10, b = 100;
   float c = 10.5, d = 100.5;
       printf("++a = %d \n", ++a);
       printf("a++ = %d \n", a++);
       printf("--b = %d \n", --b);
       printf("b-- = %d \n", b--);
       printf("a++ + --b = %d\n", a++ + --b);
       printf("++c = %.2f \n", ++c);
       printf("c++ = %.2f \n", c++);
       printf("--d = %.2f \n", --d);
       printf("d-- = %.2f \n", d--);
       printf("--a + ++d = %.2f\n",--a + ++d );
    return 0;
}
```

(12 Marks)

3.4 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" );
 }
```

(7 Marks)

4. Question No. 4

4.1 Describe what is performed by the following functions.

a) getchar()
b) putchar()

(4 Marks)

4.2 write the meaning of following backslash codes.

a) \n
b) \t
c) \"
d) \\
e) \0

(5 Marks)

4.3 What is the difference between a while statement and do-while statement?

(4 Marks)

4.4 There are 30 students in a class and they are following 5 subjects. Declare two dimensional array named stu_marks to store their final exam marks.

(3 Marks)

4.5 Write a simple program to read a course code (string variable) of any course that you are following and the marks (integer variable) you hope to get for the course during the final exam. Assume a suitable grade (character variable) accordingly. Display the result as follows.

(Example:	**Course code**	**Marks**	**Grade**
	CSU3200	**95**	**A**

(9 Marks)

5. Question No. 5

5.1 a) What is pointer? Explain using an example.

(3 Marks)

b) Explain the following
i. Address of operator -
ii. Value at address operator (4 Marks)

5.2 State the output of the following program. (Assume that variable var is in memory location 6356732 and pointer variable p is in memory location 6356728)

```
#include <stdio.h>
int main()
{
        int var = 10;
        int *p;
        p = &var;
        printf("&var = %u\n", &var);
        printf("&p = %u\n", &p);
        printf("p = %u\n", p);
        printf("var = %d\n", var);
        printf("*p =%d\n", *p);
}
```

(5 Marks)

5.3 A company wishes to store the details of items they are having using a computer. They ask you to create a union named 'sales' to use with that purpose. The fields they need are

i_name – characters (string)
i_price – number with fractional part
i_balance – decimal number
i_type – character

Declare a union 'sales' to hold the above information and then declare a union variable named 'ouritems'.

(6 Marks)

5.4 Find the syntax errors if any, of the following code segments. Then write the output of it.

```
int i = 0;
while (++i < 5) {
        printf(%d\n", i);
}
```

(3 Marks)

```
int  n = 5,  i;
for(i=1 ; i<=4  ++i)
  {
 printf("%d * %d = %d\n", n i, n*i);
  }
```

(4 Marks)

6. Question No. 6

6.1 What are the two types of parameters passing methods?

(2 Marks)

6.2 If the variables x =10 and y = 2, write the values of x and y after execution of each of the following statements. (consider the initial value for each statement)

i. y += x;
ii. x - = y;
iii. y *= x;
iv. x /= y;
v. x %= y;

(5 Marks)

6.3 What is the value of 'a' after executing the following C programming statement.

a = 8 + 16 / (5 + 3) – 4;

(2 Marks)

6.4 After executing each statement given below, write the output considering the given strings

```
char s1 = "Humpty";
char s2 = "Dumpty";
```

i. strcmp(s1, s2);
ii. strlen(s1);
iii. strcpy(s1, s2);
iv. strcat(s1, s2);

(8 Marks)

6.5 Write a complete C program to read two numbers, swap (interchange) them and print the numbers. Your program should use a function to swap the values of two variables.

(8 Marks)