

KATHMANDU UNIVERSITY
End Semester Examination
June/July, 2023

29 JUN 2023

Level : B.E./B.Sc./B.Tech.
Year : I
Time : 2 hrs. 30 mins.

Course : COMP 102
Semester: I
F.M. : 40

SECTION "B"
[6Q. × 4 = 24 marks]

Attempt *ANY SIX* questions.

1. What are the rules for writing variable names in C? Write a program to find the area and circumference of a circle. Constant value $PI = 3.14$. [1+3=4]
2. What are operators? Explain unary operator ++ (both as prefix and postfix) with a suitable example. [1+3=4]
3. Write an interactive C program to input marks of three subjects (Mathematics, English, Physics) for a student and find the total, percentage and division of the student (make necessary assumptions). [1+1+1+1=4]
4. Write a C program to generate the following pattern.

1 2
1 2 3
1 2 3 4
1 2 3 4 5
5. List the storage classes available in C. Describe each of them in terms of default initial value, storage location, scope and life of variables. [1+3=4]
6. In what ways does an array variable differ from an ordinary variable? In what ways arrays are similar to pointers, explain. [2+2= 4]
7. Write short notes on (*ANY TWO*):
 - a. Difference between while and do while
 - b. break, continue and go to statement
 - c. Recursion

SECTION "C"
[2Q. × 8 = 16 marks]

Attempt *ANY TWO* questions.

8.
 - a. What is the purpose of functions in a program? Differentiate between pass by value and pass by reference with suitable examples. [1+3=4]
 - b. What are arguments? Explain their importance with examples. [2]
 - c. What are return types? Explain their importance with examples. [2]
9.
 - a. Discuss the menu driven program with an example. [2]

b. Write a modular program for the following:

[2+2+2=6]

- i) Find the factorial of any integer entered through the keyboard.
 - ii) Find the square of a number entered through the keyboard
 - iii) A function power(a,b) to calculate the value of a raised to b
10. Write a program that defines a structure called student with suitable attributes (name, roll_no, email, enrolled_year etc.) and read the data for at least five students. The program should access the structure member using structure pointer and display the records in ascending order according to the enrolled_year of the student.

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Marks Scored:

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Exam Roll No. :

Time: 30 mins.

F.M. : 10

Registration No.:

Date **29 JUN 2023**

SECTION "A"

[20Q. × 0.5 = 10 marks]

Encircle the most appropriate alternative from each set of choices.

- C programming language is _____.
a. Low Level
b. Low + High
c. High Level
d. Assembly language
- C language was developed in the year _____.
a. 1999
b. 1972
c. 1978
d. 1990
- What does the sizeof() operator do in C programming?
a. It gives the size of operator.
b. It gives the size of variable.
c. It gives the size of C-code.
d. It gives the size of data type.
- The number **45.56** needs to be stored in a variable of _____ data type?
a. int
b. double
c. long int
d. float
- Operator % in C Language is called _____.
a. Percentage Operator
b. Modulus
c. Quotient Operator
d. Division
- Mark the correct output of the following code snippet.

```
int i = 10;  
i = ++ i + ++i ;  
printf ( "%d", i );
```


a. 21
b. 23
c. 22
d. 24
- What is the output of the following code?

```
int x = 5 * 10 / 3 + 9;  
printf("%d", x);
```


a. 21
b. 24
c. 23
d. 25
- Which keyword can be used for coming out of recursion?
a. break
b. exit
c. return
d. both break and return

9. What will be the output of the following C code?

```
#include <stdio.h>
int main()
{
    while ()
        printf("In while loop ");
    printf("After loop\n");
}
```

- a. In while loop after loop
- b. Compile time error
- c. After loop
- d. Infinite loop

10. Which of the following is a correct format for declaration of function?

- a. return_type function_name(argument type);
- b. return_type function_name(argument type){}
- c. return_type (argument_type)function-name;
- d. all of the above

11. The value obtained in the function is given back to main by using _____ keyword.

- a. return
- b. new
- c. static
- d. volatile

12. Comment on the following pointer declaration.

```
int *ptr, p
```

- a. ptr is a pointer to integer, p is integer variable
- b. ptr and p, both are pointers to integer
- c. ptr is a pointer to integer, p may or may not be
- d. ptr and p both are not pointers to integer

13. Which is an indirection operator among the following?

- a. &
- b. ->
- c. *
- d. .

14. Comment on an array of the void data type.

- a. It can store any array of void data type
- b. It only stores element of similar void data type to first element
- c. It acquires the data type with the highest precision in it with one void data type
- d. You cannot have an array of void data type

15. What are the different ways to initialize an array with all elements as zero?

- a. int array[5] = {};
- b. int array[5] = {0};
- c. int a = 0, b = 0, c = 0;
int array[5] = {a, b, c};
- d. all of the above

16. Local variables are stored in an area called _____.

- a. Heap
- b. Free memory
- c. Permanent storage area
- d. Stack

17. Which of the following are themselves a collection of different data types?

- a. string
- b. array
- c. structures
- d. all of the mentioned

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18. User-defined data type can be derived by _____.
- a. struct
 - b. typedef
 - c. enum
 - d. all of the mentioned

19. What will be the output of the following C code?

```
int x = 0;
if (x == 0)
printf("hi");
else
printf("how are u");
printf("hello");
```

- a. hi
 - b. Hello
 - c. how are u
 - d. hihello
20. For how many times the loop is executed in the following statements?
- ```
for (i= 0; i<=9;i--)
i= i + 3;
```
- a. 4
  - b. 6
  - c. 5
  - d. indefinitely