

KATHMANDU UNIVERSITY  
End Semester Examination  
May/June, 2022

Marks scored:

Level : B.Sc.

Year : I

Course : COMP 102

Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date : June-07, 2022

SECTION "A"

[20Q. × 0.5 = 10 marks]

Mark [ ✓ ] in the appropriate answer box.

- Operators have precedence. A Precedence determines which operator is  
 faster  evaluated first  
 takes less memory  takes no arguments
- What will be output when you will execute following c code in a gcc compiler?  

```
#include<stdio.h>
int main(){
    printf("%d\t",sizeof(6.5));
    printf("%d\t",sizeof(900));
    printf("%d",sizeof('A'));
    return 0;
}
```

 4 2 1  4 4 1  
 8 2 1  8 4 1
- Which of the following operator dose take only integer operands?  
 +  \*  /  %
- Which of the following statement is **CORRECT** for ++ operator?  
 It is a unary operator  
 The operand can come before or after the operator  
 It associates from the right  
 All of above
- continue** statement is used  
 to go to the next iteration in a loop  
 come out of a loop  
 exit and return to the main function  
 restarts iterations from beginning of loop
- Which of the following is not a keyword of 'C'?  
 auto  register  int  function
- What is **sizeof** in 'C'?  
 Operator  both operator & reserve word  
 reserve Word  Function
- Which of the following statement is **FALSE**?  
 An array of characters is called string.  
 Array can be passed to function.  
 Array is always reference type.  
 None of these

9. What will be the output of following program?

```
int main()
{
    int i,j = 2 ;
    int nbegin=10, n = 0, nend = 3;
    for (i=0;i<=nend;i++)
    {
        n=nbegin+i*nend;
        printf("%d\t",n+j);
        j++;
    }
}
```

12 16 20 24  
 12 13 14 15

12 14 16 18  
 None of the above

10. Union differs from structure in the following way

All members are used at a time  
 Only one member can be used at a time  
 Union cannot have more members  
 Union initialized all members as structure

11. Which is **NOT** the selective control flow statement?

while  switch-case  
 if  if-else

12. What is the output of this C code?

```
void main()
{
    int x = 5 % 2 * 3 / 2;
    printf("Value of x is %d", x);
}
```

Value of x is 1  
 Value of x is 2

Value of x is 3  
 Compile time error

13. Difference between calloc() and malloc()

calloc() takes a single argument while malloc() needs two arguments  
 malloc() takes a single argument while calloc() needs two arguments  
 malloc() initializes the allocated memory to ZERO  
 calloc() initializes the allocated memory to NULL

14. Consider the following program fragment

```
For (digit = 0; digit < 9; digit++)
{
    digit = digit * 2;
    digit--;
}
```

How many times the loop will be executed?

Infinite

9

14

0

15. How many times the string "Welcome" is printed?

```
#include<stdio.h>
int main() {
    int x;
    for (x = -1; x<=10; x++)
    {
        if(x < 5)
            continue;
        else
            break;
        printf("Welcome\n");
    }
    return 0;
}
```

- |   |                             |
|---|-----------------------------|
| <input type="checkbox"/> infinite Times | <input type="checkbox"/> 0  |
| <input type="checkbox"/> 11             | <input type="checkbox"/> 10 |

16. Which of the following statement is **CORRECT**?

(I) The maximum value a variable can hold depends upon its storage class.

(II) By default all variables enjoy a static storage class.

- |   |  |
|---|--|
| <input type="checkbox"/> Only I is correct  | <input type="checkbox"/> Both I & II are correct   |
| <input type="checkbox"/> Only II is correct | <input type="checkbox"/> Both I & II are incorrect |

17. Which operator has the lowest priority?

- |                             |                            |                            |                          |
|-----------------------------|----------------------------|----------------------------|--------------------------|
| <input type="checkbox"/> ++ | <input type="checkbox"/> % | <input type="checkbox"/> + | <input type="checkbox"/> |
|-----------------------------|----------------------------|----------------------------|--------------------------|

18. The operator + in a += 4 means

- |                                    |                                    |
|------------------------------------|------------------------------------|
| <input type="checkbox"/> a = a + 4 | <input type="checkbox"/> a = 4     |
| <input type="checkbox"/> a + 4 = a | <input type="checkbox"/> a = 4 + 4 |

19. What is the output of this C code?

```
int main()
{
    while (0) {
        printf("In while loop ");
    }
    printf("After loop");
}
```

- |   |  |
|---|--|
| <input type="checkbox"/> In while loop            | <input type="checkbox"/> After loop    |
| <input type="checkbox"/> In while loop After loop | <input type="checkbox"/> Infinite loop |

20. Pointer is a special kind of variable which is used to store ..... of a variable.

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| <input type="checkbox"/> data type | <input type="checkbox"/> value    |
| <input type="checkbox"/> address   | <input type="checkbox"/> variable |



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Level : B.Sc.  
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Time : 2 hrs.30 mins.

Course : COMP 102  
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F.M. : 50

SECTION "B"

[6Q. × 4 = 24 marks]

Attempt *ANY SIX* questions.

1. Differentiate if-else with switch statement. [2+2]
2. Discuss on precedence and associativity with suitable mathematical expression. [2+2]
3. What are the similarities and differences between structure and union? [2+2]
4. What is recursion (recursive function)? Explain working principle of recursion with suitable example. [2+2]
5. Write a program that will implement the following formula. Assume suitable data type for each variable.

$$A = P (1 + r / n)^{n t} \quad (^ \text{ signify exponentiation})$$

Where:

A = the future value of the investment/loan, including interest

P = the principal investment amount (the initial deposit or loan amount)

r = the annual interest rate (decimal)

n = the number of times that interest is compounded per year

t = the number of years the money is invested or borrowed for

6. Write a program to input a number and find the largest digit in a given number and print it with appropriate message. (e.g. if number is 5273, then system should print 7 as the largest)
7. Write a program to define a structure for employee containing employee\_id, name, salary and department. Read five records and display them. Assume necessary data type for each structure member.

SECTION "C"

[2Q. × 8 = 16 marks]

Attempt *ANY TWO* questions.

8. Compare library function with user defined function. What is meant by function argument, function call and return value? Illustrate with suitable programming example. [2+2+2+2]
9. Compare while loop and do while loop with example. Write a program to sort N numbers of floating point (**decimal**) values. [4+4]
10. Write a program using **user defined function** that will check whether a number is dudeney or not? If the number is dudeney, then pass it to **another user defined function** which will find the sum of factorial of that number. [Hint: 512 is a dudeney because  $5 + 1 + 2 = 8$  and  $8^3 = 512$ . Also sum of factorial is  $5! + 1! + 2! = 123$ ]. [4 + 4]

