KATHMANDU UNIVERSITY
End Semester Examination
August, 2019

Mark scored:

Level : B.Sc./B.Pharm./B.Tech.
Year : I

Course : COMP 102
Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date AUG 27 2019

SECTION "A"

[20Q × 0.5 = 10 marks]

Encircle the most appropriate answer.

1. C is a _____ and _____ programming language.
   a. algebraic, structured
   b. algebraic, system
   c. general-purpose, structured
   d. general-purpose, applications

2. Can reserved words and keywords be same in C?
   a. yes
   b. no
   c. depends upon context
   d. reserve words does not exist in C

3. Certain nonprinting characters are known as _____.
   a. blank sequence
   b. backslash sequences
   c. line feed sequences
   d. escape sequences

4. The operators within C are grouped hierarchically according to their _____.
   a. associativity b. precedence c. ancestor d. sibling

5. The result of following expression is_____.

```
i=8, j=5
2*((i/5)+(4*(j-3))%(i+j-2))
```

   a. 19.2 b. 18 c. 0 d. none

6. Which is the output of following program?

```
#include<stdio.h>
main()
{
     int n = 10;
     printf("%d", funct1(n));
}

int funct1(int n)
{
     if(n>0) return (n+fuct1(n-2));
}
```

   a. 0 b. 30 c. infinity d. garbage value

7. Which is not a conversion character?
   a. i b. o c. x d. y

8. The _____ statement causes a particular group of statement to be chosen from several available groups.

a. expression b. compound c. control d. switch

9. Which is the output of following program?

```
#include<stdio.h>
main()
{
     int i=0, x =0;
          for(i=1;i<10;++i){
               if(i%2==1)
                    x+=i;
               else
               x--;
               printf("%d",x);
          }
          printf("\n x = %d",x);
}
```

a. 1 0 3 2 7 6 13 12 21
   x=21
b. 0 1 1 3 2 6 13 12 20
   x=21
c. 1 1 1 3 2 6 13 12 20
   x= 20
d. 1 0 3 2 7 6 13 12 21
   x = 20

10. Which is the different storage-class specifications in C?

a. automatic, external, static and register b. auto, extern, static and register
c. local, global, static and register d. all of the above

11. Which is the output of following program?

```
#include<stdio.h>
main()
{
     int a, count;
     for(count=1;count<=5;++count){
          a=funct1(count);
          printf("%d", a);
     }
}

funct1(int x)
{
     static int y =0;
     y+=x;
     return (y);
}
```

a. 1 3 6 10 15 b. 1 2 3 4 5 c. 5 4 3 2 1 d. 15 10 6 3 1

12. Which bitwise operator is suitable for turning off a particular bit in a number?
a. && operator
b. & operator
c. || operator
d. ! operator

13. In expression i = g() + f(), the first function called depends on _____
a. compiler
b. associativiy of () operator
c. precedence of () and + operator
d. left to write of the expression

14. Which is the output of following program?

```
#include <stdio.h>
int main()
{
   int *ptr, a = 10;
   ptr = &a;
   *ptr += 1;
   printf("%d,%d/n", *ptr, a);
}
```

a. 10 10
b. 10 11
c. 11 10
d. 11 11

15. Which is true for **a**, if **a** is defined as: **int a[10][20];** ?
a. **a** is true for two-dimensional array
b. 200 int-sized locations have been set aside
c. The conventional rectangular subscript calculation 20 * row + col is used to find the element **a**[row, col].
d. all of the above

16. What is the output of the following program?

```
#include <stdio.h>
struct student
{
};
void main()
{
     struct student s[2];
     printf("%d", sizeof(s));
}
```

a. 2
b. 4
c. 8
d. 0

17. The size of a union is determined by the size of the _____.
a. first member in the union
b. last member in the union
c. biggest member in the union
d. sum of the sizes of all members

18. Member of a union is accessed as_____.
a. union-name.member
b. union-pointer->member
c. both union-name.member and union-pointer->member
d. none of the mentioned

19. Which is the output of following program?

```
#include <stdio.h>
void main()
{
        int a[2][3] = {1, 2, 3, 4, 5};
        int i = 0, j = 0;
             for (i = 0; i < 2; i++)
                 for (j = 0; j < 3; j++)
                      printf("%d", a[i][j]);
}
```

a. 1 2 3 4 5 0
b. 1 2 3 4 5 garbage value
c. 1 2 3 4 5 5
d. run time error

20. Which one of the following header files must be included to use dynamic memory allocation functions?

a. stdlib.h
b. stdio.h
c. memory.h
d. dos.h

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

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

SECTION "B"

[6Q. × 4 = 24 marks]

Attempt *ANY SIX* questions.

1. Summarize the rules for naming identifies. What are the restrictions to be applied for the keywords use? [2+2]

2. How can the value of an expression be converted to a different data type? What is it called? Describe two equality operators included in C. How do they differ from the relational operators? [1+1+1+1]

3. How can the getchar function be used to read multicharacter strings? If whitespace characters are present within a control string, how are they interpreted? How can the maximum field width for a data item be specified within a scanf function? How can the minimum field width for a data item be specified within the printf function? [1+1+1+1]

4. Write a loop that generates every third integer, beginning with i=2 and continuing for all integers that are less than 100. Calculate sum of those integers that are evenly divisible by 5. Use two different methods to carry out the test. [2+2]
   a. Use the conditional operator (? :).
   b. Use an if-else statement.

5. What is the purpose of return statement? Summarize the rules associated with function prototypes. Write a function that calculates and displays the real roots of quadratic equation. [1+1+2]

$$ax^2+bx+c = 0$$

6. What advantage is there in defining an array size in terms of a symbolic constant rather than a fixed integer quality? How is an array name interpreted when it is passed to a function? Write a C program that enters a line of text, stores it in an array and then displays it backwards. Allow the length of the line to be unspecified (terminated by the pressing the Enter key), but assume that it does not exceed 80 characters. [1+1+2]

7. Write a program to count the number of vowels, consonants, digits, whitespace characters and other characters in a line of text using function and array. [4]

SECTION "C"

[2Q. × 8 = 16 marks]

Attempt *ANY TWO* questions.

8. What is the purpose of do-while statement? How does it differ from the while statement? What is the purpose of the break statement? We use function to make our program modular. State at least three advantages of making your program modular. With example, differentiate between pass by value with pass by reference. [1+1+1+3+2]

9. Write a program that defines a structure called STUDENT with suitable attributes and reads data for '*n*' students. Your program should display the records in ascending order according to the name of student. [8]

10. Write a recursion program to find sum of *n* natural number. Write a program that reads a sentence and counts the total number of character. Write a program that reads the mark of the course and prints the equivalent grade. [3+3+2]