

U.G. 4th Semester Examination - 2021

COMPUTER SCIENCE

Course Code : BCOSGEHC20A

Course Title: Introduction to Programming
(using C)

Full Marks : 30

Time : 2 Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **ten** questions: 1×10=10
- a) What is a variable?
 - b) What is a constant?
 - c) What is keyword 'auto' for?
 - d) Explain the syntax for loop.
 - e) What is a pointer?
 - f) What is the keyword 'void' mean?
 - g) What is infinite loop?
 - h) Can the 'main' function left empty?
 - i) What do you know about string?
 - j) What is a Token?

- k) How will you declare a structure?
- l) What is the significance of a function prototype?
- m) What does the following statement mean?
extern int x;
- n) What is the output of the following?

```
#define CUBE(x) x*x*x
int main( )
{
    printf("%d", CUBE(5+5+0));
    return 0;
}
```

- o) What is the use of 'typedef'?
- ```
*** *** ***
```

2. Answer any **five** questions: 2×5=10
- a) What will be the output of the following?

```
main()
{
 int a =100, b;
 b = ++a;
 printf("%d %d\n", a, b);
 a = b++;
 printf("%d %d", a, b);
}
```

- b) How will you reconstruct the following code using the ternary operator?

```
if (x == y)
 return x*y;
else
 return x/y;
```

Find the value of z given x=3 and y=2 from the following:

```
z=(x+y)>5)? x*x : y*y; 1+1
```

- c) Write a recursive function to print the first 10 even integers.
- d) What is the difference between call by value and call by reference?
- e) What is the difference between the declarations (i) and (ii)?
- i) `int (*p)[5];`
- ii) `int *p[5]` 1+1
- f) What is the output of the following statements?
- i) `printf ("%d", 1?0?1 : 2 : 3);`
- ii) `printf ("%d", sizeof(" "));` 1+1
- g) When is it preferable to use a *do...while loop*?

- h) How will you solve the problem of a dangling pointer?

3. Answer any **two** questions: 5×2=10

- a) What is memory allocation? Differentiate static and dynamic memory allocation. Differentiate malloc and calloc. 1+2+2
- b) The Fibonacci numbers are defined recursively as follows:

$$F_1 = 1$$

$$F_2 = 1$$

$$F_n = F_{n-1} + F_{n-2}, n > 2$$

Write a C program that will generate and print the first "n" Fibonacci numbers.

- c) Write a C program to compute the real roots of a quadratic equation  $ax^2+bx+c=0$