B.Tech. 2nd Semester Examination, 2021

CS 204: Basic computer Science and Engineering

Full Marks: 70   **Time: 3 Hours**

Group A (Answer Any Five Questions)   2×5=10

1. (a) What are the differences between linear and non-linear data structure?

(b) Differentiate between pre-increment and post-decrement operator with suitable example.

(c) Differentiate between return and exit.

(d) What is prefix expression? Give an example.

(e) Define Array..

(f) What will be the output of the following program? Explain your answer.

```
#include<stdio.h>
int main(){
inti;
(sizeof(i) > -1)  ? printf("C++") : printf("C");
return 0;}
```

(g) What will be the output of the following program? Explain your answer.

```
#include<stdio.h>
 int main(){
char str1[2]="A";
printf("\n%c\n%c\n%s", str1[0],str1[1],str1);
return 0;  }
```

(h) What do you mean by bitwise operator in C?

Group B (Answer Any Six Questions)   5×6=30

2. Write a C program that will replace a word with another word. Users will give 3 inputs. E.g. Inputs will be as follows;

(a) Source String: "Ram is a good boy. Ram is a bad boy."

(b) Search String: "Ram"

(c) Replace String: "Shyam"

Output will be: "Shyam is a good boy. Shyam is a bad boy."

3. Write a C program that will copy file contents from a file to another file.

4. What will be the output of the following codes? Explain.
   int a=0; for(;;) {if(x++==4) break; continue;} printf("%d",x);

5. What is the problem of using scanf() function? How to solve it? Explain with an example.

6. Write a C program that will print prime numbers within 1 to100.

7. Write a C program that will compute the sum of first 10 even numbers.

8. Write a C program to find out whether a year is leap year or not.

9. Write a C program to find out the GCD of two integers.

10. Write a C program that will print the Fibonacci series.

Group C (Answer Any Three Questions)   10×3=30

11. Write a program to implement Circular Queue with three operations (Enqueue, Dequeue and Traverse).

12. What are the advantages of Linked list over Array? Write a function to implement insert at begin operation of single linked list.

13. Explain how we can implement queue using stack? Convert the following infix expression to postfix expression by using stack.
    a+(b*c – (d/e^f)*g)*h

14. Write a C program that will take a string (name) and find its initial (e.g., Subhash Chandra Bose should be printed as S. C. Bose).

15. a) Define Structure. What are the differences between array of structure and structure of array?
    b) Write a C program to find out the largest and smallest element of an array.
                                                                    5+5=10