Total number of printed pages - 3

UG(SEM-I)BCA/CSC_C1

2025

COMPUTER SCIENCE & IT

Paper Code: BCA/CSC24C101/BCA/CSC23C101

(Programming and Problem Solving using C)

Full Marks: 70

Time: Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following questions: 2×5=10

   a) What is the role of registers in the memory hierarchy?
   b) Mention two properties of an algorithm.
   c) State two technology used in 4^{th} generation computer.
   d) What is asyntax error?
   e) How global variable is different from local variable?

2. Answer ***any nine*** of the following questions : 9×4=36

   a) What will be output when you will execute following C code? Justify your answer.

```
int main(){
int a=2,b=7,c=10;
c=a==b;
printf("%d",c);
}
```

Contd..

b) What will be output when you will execute following C code? Justify your answer.

```
#define PRINT printf("\n Cotton University");printf("\n Tezpur University");
#include<stdio.h>
int main(){
int x=1;
if(x--)
        PRINT

else

        printf("\n Gauhati University");
return 0;
}
```

c) Discuss the difference between volatile and non-volatile memory within the storage unit and explain why both are needed. 2+2=4

d) Explain the role of compiler in high level programming language.

e) Differentiate between *break* and *continue* statement using suitable example.

f) Design a flowchart to check whether a given number is prime or not.

g) Explain the concept of modular programming and discuss how functions help in implementing modularity within a program. 2+2=4

h) What is an array? Discuss its advantages and disadvantages in programming.

i) Write a C program to check whether two integers are equal without using any comparison operators.

j) Write a C program to print first 'N" natural numberusing recursion.

k) Write a C program to read a sentence from a file named '*input.txt*' and display the number of characters present in the file. 2+2=4

3. Answer ***any three*** from the following questions: 8×3=24

a) What is a data type? Explain how improper use of data types can lead to errors or inefficient memory usage, and give suitable examples. 2+6=8

b) What is your understanding of call by value and call by reference? Elaborate on the distinctions between call by value and call by reference, providing a suitable example. 4+4=8

c) Write a C program that accepts a two-dimensional matrix of integers as input and performs the following operations: 4+4=8
(i) Calculate the sum of all odd integers in the matrix
(ii) Determines the number of unique integers in the matrix

d) Differentiate between *structure* and *union* in C using appropriate example.

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