

MCS-011

BACHELOR OF COMPUTER APPLICATION (BCAOL)
PROBLEM SOLVING AND PROGRAMMING

Time : Three Hours

Maximum Marks : 100

Note : Attempt questions from all Sections as instructed.

Section-I (Short Answer Type Questions) (5×4=20)

Attempt any five questions. Each question carries 4 marks.

1. Define a preprocessor directive. Give an example, used in C programming language.
2. Define an array. List the types of arrays with reference to dimensions and give an example for each.
3. What are the uses of “\0” (Null) character and “/n” (Newline) character in ‘C’ programming. Give an example for each.
4. Define a compiler and an interpreter. Mention the difference between them.
5. Define a function in C. What is the significance of main() function?
6. What is the purpose of printf() and scanf() functions in a C program? Give an example for each.
7. What is the use of looping statements in C programming? List the types of loops and give an example for any one looping statement.

Section-II (Medium Answer Type Questions) (5×10=50)

Attempt any five questions. Each question carries 10 marks.

8. Write algorithms for the following:

a) To calculate simple interest

b) To calculate the circumference of a circle if radius is given

9. Write a C program to find the largest number among the 3 numbers given as input.

10. Write a C program to display the multiplication table of the number given between 1 to 20 as input.

11. Describe the following constants and give example for each:

a) Integer Constant (Decimal, Octal, Hexadecimal)

b) Real Constant

c) Character Constant

d) String Constant

12. Explain the following program-constructs of C language and give an example for each:

a) Sequential statements

b) Selection (conditional) statements

c) Iterative statements

13. The definitions of all the mathematical functions are included in the `<math.h>`. Mention the return value of the following math functions:

a) `double sqrt(x)`

b) `double pow(x, y)`

c) `int abs(int i)`

d) `double exp`

e) `double sin(x)`

14. Explain the type conversions (Implicit and Explicit) in C with an example for each.

Section-III (Long Answer Type Questions) (2×15=30)

Attempt any two questions. Each question carries 15 marks.

15. Write a program in C using structures to simulate the marks, percentage, grade calculation for 10 BCA students (1st Semester) of IGNOU.

Note: Assumptions can be made wherever necessary.

16. Write a menu-driven program in C to perform the following:

- a) Calculate the square of a given number, if choice is 1.
- b) Calculate the cube of a given number, if choice is 2.
- c) Otherwise, print the number as it is, if the choice is 3.
- d) Exit, if choice is other than 1, 2 and 3.

17. Write a C program to count the no. of characters, no. of words and no. of lines in a given file.