C

(Printed Pages 4)

Roll No. _____

20/1082

B.C.A. Examination, 2020

First Semester

Second Paper

(Programming Principles & Algorithm)

Time : Three Hours ***Maximum Marks : 75***

Note: Answer any **five** questions. **All** questions carry equal marks.

Note: The answers to short questions should not exceed **200** words and the answers to long questions should not exceed **500** words.

1. (a) Why is C known as a 'functional' language? (5+5+5)

   (b) Explain the structure of a C program with the help of an example.

   (c) Write a C program to print the ASCII value of a character.

2. (a) Write a C program to convert input temperature from Fahrenheit to Celsius and Vice Versa. 5+5+5

   (b) Write a C program to compute the value of X^N, given X and N as input integer values.

   (c) What do you understand by escape sequences? Enumerate the use of different escape sequences with examples.

3. (a) You are given an integer value. Write a program in C to print its value in Decimal, Octal and Hexadecimal using printf ( ) statement.

   (b) Explain with examples : 6+9

   (i) Nested If - Else

   (ii) Nested for loop

   (iii) Break and Continue

4. (a) Given the length and breadth of a rectangle, find the area and perimeter of the rectangle by writing a C program for it. 5+5+5

(b) Write a C program to read the weekday Number as {1, 2, 3, 4, 5, 6, 7) and to print the weekday name using SWITCH statement, where 1 → Sunday, ..., 7→ Saturday.

(c) Write a C program to reverse the digits of a number which is provided as an integer.

5. Illustrate the use of following operators through program segments : 15

(a) Left shift operator

(b) Right shift operator

(c) Bitwise operators

(d) Ternary operator

(e) Assignment operator

20/1082

6. Write short notes on : 5+5+5

(a) Algorithms and their properties

(b) Header Files

(c) Divide and Conquer Strategy

7. (a) What do you understand by Recursion? Illustrate the problem solving by recursion through a C program. 7+8

(b) Write a recursive program for obtaining the N^{th} Fibonacci number term, given N as input.

8. Differentiate between the following : 3×5

(a) getchar ( ) and putchar ( )

(b) Call by value and Call by Reference

(c) Prime Number and Perfect Number

(d) Global Variable and Local Variable

(e) Time Complexity and Space Complexity of an algorithm.