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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth semester B.Tech degree examinations (S) September 2020

Course Code: ME305

Course Name: COMPUTER PROGRAMMING & NUMERICAL METHODS

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks. Marks

1 a) Write the algorithm and draw the flow chart to find sum of first 'n' natural numbers. (6)

b) Explain the basic structure of a C++ program with suitable example. (4)

2 a) Explain any six types of operators available in C++. (6)

b) Describe the basic data types in C++ with example. (4)

3 a) Differentiate between while and do while loops with suitable example. (6)

b) Write a C++ program to check whether an entered number is palindrome or not using loop. (4)

4 a) What is recursion? Write a C++ program to calculate the factorial of a given number using recursion. (6)

b) Explain function overloading with suitable example. (4)

PART B

Answer any three full questions, each carries 10 marks.

5 a) Write a C++ program to sort a set of numbers in an array ascending order. (6)

b) Write note on pointers with its advantages. (4)

6 a) Write a C++ program to multiply two matrices. (6)

b) Differentiate between function call by value and call by reference with suitable example. (4)

7 a) Explain class and objects in OOP's with suitable example. (6)

b) Write note on friend declaration with suitable example. (4)

8 a) What is inheritance? Explain various types of inheritance. (6)

b) Describe various access specifiers in C++. (4)

PART C

Answer any four questions, each carries 10 marks.

9 a) Using Gauss elimination method, find the solution of the system of equations (6)

$x + y - z = 9$

$8y + 6z = -6$

$-2x + 4y - 6z = 40$

b) Which are the different sources of error in numerical computations? (4)

10 Solve the following system of equations using Gauss Seidel method. (10)

$8x - 3y + 2z = 20$

$4x + 11y - z = 33$

$6x + 3y + 12z = 36$

11 Using Lagrange's interpolation method, find the value of y, when x= 10 for the following table. (10)

x	5	6	9	11
y=f(x)	12	13	14	16

12 Write a C++ program to fit a straight line for n data values. (10)

13 Fit a straight line to the following data:

x	1	2	3	4	5	6	7
y	0.5	2.5	2	4	3.5	6	5.5

(10)

14 Derive finite difference approximation equations for Laplace equation. (10)

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