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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