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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (S, FE) / S3 (PT) (S, FE) Examination December 2023 (2015 Scheme)



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) List and explain different types of logical operator used in C++. (5)
b) Write a C++ program to find cube of a number. (5)
- 2 a) What are the limitations of identifiers in C++? (5)
b) Write a C++ program to calculate sum of first 'n' integer numbers. (5)
- 3 a) List and explain any 5 control structures used in C++ with help of examples (5)
b) Write a C++ program to print transpose of a 5x5 matrix (5)
- 4 a) What is function overloading? Explain with help of examples (5)
b) Differentiate between break and continue statements (5)

PART B

Answer any three full questions, each carries 10 marks.

- 5 a) Write a C++ program/algorithm to sort an array in ascending order. (5)
b) Write a C++ program to find factorial of a number. (5)
- 6 a) Explain reference and dereference operators (5)
b) Write a C++ program for adding two 5x5 matrices. (5)
- 7 a) Differentiate with classes and objects in C++ (5)
b) What are access specifiers in C++? (5)
- 8 a) Explain any 2 types of inheritance with help of examples (5)
b) Differentiate between data members and member functions (5)

PART C

Answer any four full questions, each carries 10 marks.

- 9 a) List and explain different types of errors in numerical methods (5)
b) How partial differential equations are classified? (5)

- 10 Solve this system of equations using Gauss Seidel Iterative method (10)

$$4x_1 + x_2 - x_3 = 3$$

$$2x_1 + 7x_2 + x_3 = 19$$

$$x_1 - 3x_2 + 12x_3 = 31$$

- 11 Solve this system of equations using Gauss elimination method. (10)

$$x + 2y + 3z = 1$$

$$-3x - 2y - z = 2$$

$$4x + 4y + 4z = 3$$

- 12 Calculate f at x= 5 for the following set of data using Lagrange interpolation equation. (10)

x	0	1	3	4	7
f	1	3	49	129	813

- 13 Fit a straight line for the following set of data and find out temperature when time t= 5 sec. (10)

t (sec)	0.5	1.1	1.5	2.1	2.3
T (°C)	32.0	33.0	34.2	35.1	35.7

- 14 a) Find tempertare at ponts 1,2,3 & 4 using finite diiference method (10)


