

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

**Course Code: ME305**

**Course Name: COMPUTER PROGRAMMING AND NUMERICAL METHODS**

Max. Marks: 100

Duration: 3 Hours

**PART A**

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

Marks

- |   |   |     |
|---|---|-----|
| 1 | a) Explain six different built in data types used in C++ with its limits. | (6) |
|   | b) Differentiate between assignment operator and equality operators.      | (4) |
| 2 | a) List and explain different types of operators used in C++              | (6) |
|   | b) Explain basic structure of a C++ program                               | (4) |
| 3 | a) Explain different control structures used in C++                       | (6) |
|   | b) Differentiate break and continue statements.                           | (4) |
| 4 | a) Write a C++ program of find out sum of first “n” natural numbers.      | (6) |
|   | b) Explain function overloading with an example                           | (4) |

**PART B**

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

- |   |   |     |
|---|---|-----|
| 5 | a) Write a C++ program to find factorial of number  | (5) |
|   | b) Write a C++ program to receive 10 numbers in an array and to sort it in ascending order. | (5) |
| 6 | a) Write a C++ program to multiply two 5x5 matrices   | (6) |
|   | b) Differentiate between function call by value and reference                               | (4) |
| 7 | a) Explain class and objects with help of examples  | (6) |
|   | b) What are the access specifiers in C++?   | (4) |
| 8 | a) Explain inheritance and derived classes using examples                                   | (6) |
|   | b) Differentiate member functions and data members  | (4) |

**PART C**

*Answer any four full questions, each carries 10 marks.*

- |    |  |      |
|----|--|------|
| 9  | a) Write a C++ program for solving a system of linear equations by any one numerical method. | (6)  |
|    | b) Differentiate between round off error and truncation error.                               | (4)  |
| 10 | Solve the system of liner equations by Gauss elimination method                              | (10) |

$$3x - 2y + 8z = 9,$$

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

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

- 11 Solve this system of equations with Gauss-Seidel iterative method 10

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

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

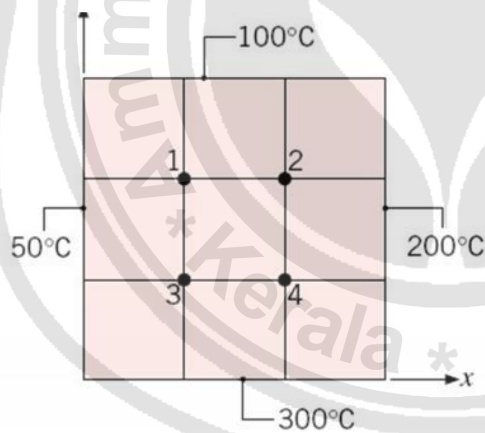
$$x_1 - 3x_2 + 12x_3 = 31$$

- 12 Fit a straight line to the following set of data. Also calculate correlation coefficient for the data and comment on the results. 10

x	1	2	3	4	5	6	7
y	0.5	2.5	2.0	4.0	3.5	6.0	5.5

- 13 Derive finite difference approximation equations for Laplace equation 10

- 14 Find out temperature at points 1, 2, 3 & 4 on a square domain using finite difference approximation method corresponding to the boundary conditions as below. 10



\*\*\*\*