

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIFTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019**

**Course Code: ME305**

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

Max. Marks: 100

Duration: 3 Hours

**PART A**

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

- |   |   | Marks     |
|---|---|-----------|
| 1 | Explain with the help of an example program how data can be inputted by reading from a file. Add statements in the program to display the numbers read. Also show the contents of the data file to be prepared. | 6+2+<br>2 |
| 2 | a) How many bits are used to store a float type C++ data in the computer memory? What is the number of significant digits in a float type data?   | 2+1       |
|   | b) Explain how a float type data is stored in the computer memory.  | 7         |
| 3 | a) What are control statements? Write any four control statements used in C++   | 6         |
|   | b) Write and explain the syntax of “for” loop.  | 4         |
| 4 | Write a C++ program using do..while statement to print the sum of squares of an array containing “10” values to be declared and initialized. Show how the output of the program is displayed.                   | 8+2       |

**PART B**

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

- |   |   |     |
|---|---|-----|
| 5 | a) List any three advantages of pointers. What is pointer to a one-dimensional array?                             | 3+3 |
|   | b) Differentiate between function call by value and function call by reference.                                   | 4   |
| 6 | Write a C++ program to declare and initialize two matrices. Add statements in this program to find their product. | 3+7 |
| 7 | a) What are friend functions?   | 4   |
|   | b) Show using an example code, how a friend function access private members of a class.                           | 6   |
| 8 | Explain public inheritance and private inheritance with suitable examples   | 10  |

**PART C**

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

- |   |  |     |
|---|--|-----|
| 9 | Solve the following system of equations using an iterative solution technique<br>$8x - 3y + 2z = 20$ , $4x + 11y - z = 33$ and $6x + 3y + 12z = 36$ . Name the method used | 9+1 |
|---|--|-----|

- 10 What is a system of linear equation? What is the condition for a unique solution? Name three methods for solving system of equations. Give three points of comparison between direct methods and iterative methods for solving system of linear equations 2+2+3+3
- 11 Mention the use of the following numerical methods/parameters (i) Aitken's methods (ii) Correlation coefficient (iii) finite difference method (iv) least square method and (v) Gauss-Jordan method. 2 mark each
- 12 a) What is correlation? How is it different from regression? 5  
b) Name any one measure of correlation. Write down its equation. 5
- 13 Write a C++ program to declare and initialize the pairs of values x and y given by (0,-12), (1,0), (2,0), (3,6) and (4,12). In the same program include statements to interpolate the value of y for x=3.2 using a fourth degree polynomial. 3+7
- 14 Write a C++ program to declare and initialize 10 pairs of values. Add more statements in this program to compute the coefficient of correlation. 3+7

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