

APJ Abdul Kalam Technological University

SIXTH SEMESTER B.TECH DEGREE EXAMINATION CE 306: COMPUTER PROGRAMMING AND COMPUTATIONAL TECHNIQUES

MODEL QUESTION PAPER

Time: 3 hours

Maximum marks: 100

Answer any **TWO** questions from each part.

PART-A

1. a. What are the basic data types used in C++? (5)
- b. Write a program to sort a given set of integer numbers in descending order. (10)
2. a. Differentiate between the statements *break* and *continue* as used in C++ programming. (4)
- b. How effectively can the increment operator and decrement operator replace a programming segment in C++? (4)
- c. Write program to check if a given triplet represents a triangle or not. If so test whether it represents an equilateral or isosceles or scalar triangle. (7)
3. a. What are uses of conditional operators in C++? (5)
- b. Write a program to find the product of two matrices. (10)

PART-B

4. a. Explain the concept of structures within structures (5)
- b. Write a C ++ program to calculate factorial of a given number using recursion (10)
5. a. Differentiate between function definition and function declaration. (5)
- b. Define a structure to a store address of a person including PIN code. Write program to read, store and print the address of N persons. For any input name, the program shall print the corresponding address. (10)
6. a. What are main features of Object Oriented programming? Explain any two with examples. (5)

- b. Prepare a C++ program to read a list of names from two different files named as list1.txt and list2.txt and print the combined list into a new file named as combinelist.txt. (10)

PART-C

7. a. Explain the concept of successive approximation method (5)
- b. Write a program to evaluate $\int_0^6 \frac{dx}{1+x^2}$ using Trapezoidal rule. (15)
8. a. What are partial differential equations? Give an example of a real life problem to be designed as a partial differential equation. (5)
- b. Solve the following system of linear equations using Gauss elimination method.
 $4x_1+2x_2-x_3+x_4=0$, $x_1-2x_2-4x_3-x_4=8$, $3x_1+4x_2-3x_3+2x_4=-6$,
 $2x_1-2x_2+2x_3+x_4=5$ (15)
9. a. Prepare a C++ program to find a real root of the equation $x^3 - 3x^2 + x + 1 = 0$ using Newton Raphson method upto an accuracy of 0.001 (10)
- b. The following data gives the population of a certain town at 6 consecutive enumerations. Fit a straight line and a second degree parabola to represent the population growth. Estimate the population of the town in the year 2021. (10)

Year	1951	1961	1971	1981	1991	2001	2011
Population in lakhs	2.57	3.21	3.85	4.42	4.86	5.10	6.25