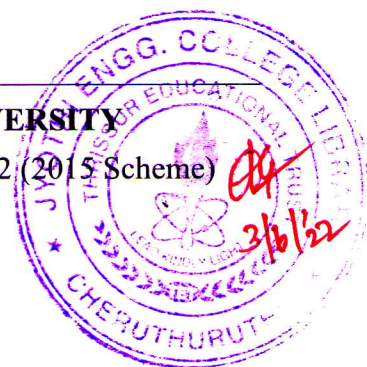


Reg No.: \_\_\_\_\_

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Sixth Semester B.Tech Degree (S,FE) Examination May 2022 (2015 Scheme)

**Course Code: CE306****Course Name: COMPUTER PROGRAMMING AND COMPUTATIONAL  
TECHNIQUES**

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer any two full questions, each carries 15 marks.*

Marks

- 1 a) Illustrate while and do while loop with its syntax. (5)
- b) Prepare a C++ program to compute the roots of quadratic equation  $ax^2+bx+c=0$ . (10)
- 2 a) How do write a well-documented C++ program using comments?? Give examples. (5)
- b) Distinguish between pre-increment and post- increment with examples. (5)
- c) Prepare a C++ program to read a string from keyboard and determine whether the string is palindrome or not. (5)
- 3 a) Describe the syntax and working of switch statement. (5)
- b) Write a C++ program to sort a given list of numbers in descending order using arrays. (10)

**PART B***Answer any two full questions, each carries 15 marks.*

- 4 a) Differentiate global and static variables with examples. (5)
- b) Write a C++ program to read the following information of 60 students: (10)  
Student name, roll number and mark in 8 subjects using a structure. Also print the list of students who secured 80% marks in total.
- 5 a) Write a function to check whether a number is an Armstrong number or not. (10)  
Using this function, print all three digit numbers which are Armstrong numbers. (Armstrong number is a number that is equal to the sum of cubes of its digits.)
- b) Distinguish between sequential and random access file. (5)
- 6 a) A Fibonacci series is a series in which any term is the sum of the previous two terms. Prepare a C++ program to print the first n terms of the above series using recursive function. (8)

- b) Explain the concept of (i) inheritance (ii) polymorphism in object oriented programming. (7)

### PART C

*Answer any two full questions, each carries 20 marks.*

- 7 a) Find an approximate root of  $x \log_{10} x - 1.2 = 0$ , by Regula-Falsi method. (10)

- b) Compute the value of  $\int_1^2 \frac{dx}{x}$  using Simpson's rule and trapezoidal rule. Take  $h = 0.25$  (10)

- 8 a) Fit a straight line of the form  $y = ax + b$  to the following data by the method of least squares. Also estimate the value of  $y$  at  $x = 2.5$  (10)

x	0	1	2	3	4
y	1	1.8	3.3	4.5	6.3

- b) Prepare a C++ program to solve transcendental equation using Newton-Raphson method. (10)
- 9 a) Solve the following system of equations using Gauss elimination method. (10)

$$2X - 3Y + Z = -1$$

$$X + 4Y + 5Z = 25$$

$$3X - 4Y + Z = 2$$

- b) Prepare a C++ program to solve an algebraic equation by successive approximation method. (10)

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