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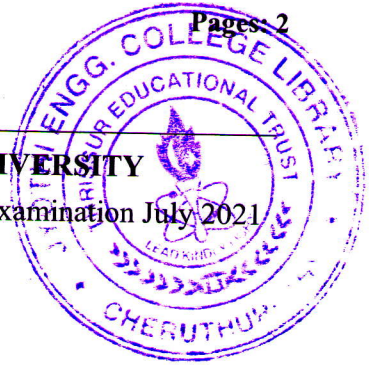
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Reg No.: \_\_\_\_\_

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

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree Regular and Supplementary Examination July 2021



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) Write the syntax of *switch* and *if* statements. (5)
- b) Write a C++ program to calculate and print roots of a quadratic equation  $ax^2+bx+c=0$  ( $a \neq 0$ ). Print the message "No real roots", if the roots are complex. (5)
- c) Write a programme to read the sides of a triangle and display whether it is a right angled triangle. (5)
- 2 a) Distinguish between implicit and explicit type conversions. (5)
- b) Name any five string handling functions. Mention their use also. (5)
- c) Write a C++ program to check whether the entered integer is prime number or not. (5)
- 3 a) Write a program to sort an array of numbers in descending order. (7)
- b) Write a program that reads a string from the keyboard and determines whether the string is palindrome or not. (8)

**PART B**

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

- 4 a) Write the difference between 'call by value' and 'call by reference'. (8)
- b) Write a program to find out the largest and smallest among the list of numbers using functions. (7)
- 5 a) Define global variable and local variable. (4)
- b) What is function overloading? Give an example. (5)
- c) Write a program to find the sum of two matrices with the help of functions for reading and printing the matrices. (6)
- 6 a) Differentiate between structure and union. (5)

- b) Using array of structures, write a program to read the Name, Gender (M,F,T), (10)  
Age and Place of residence of 100 people. The program should display the  
details of all people above a given age (taking input from the user of the  
programme).

**PART C**

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

- 7 a) Given that one root of the equation  $x^3 - 2x - 5 = 0$  lies in the interval (1.75, 2.5). (10)  
Determine the root correct to three significant digits using Regula-Falsi method.
- b) Develop a program to find out root of the equation  $x = \frac{1+e^{-x}}{2}$  using successive (10)  
approximation method.
- 8 a) Evaluate  $\int_{2.2}^{2.8} \frac{x}{1+3x} dx$  using Simpson's 1/3<sup>rd</sup> rule. (10)
- b) Write a program which evaluates numerically  $\int_0^1 \frac{1}{1+x^3} dx$  using trapezoidal rule (10)  
taking 10 intervals
- 9 a) Solve following set of equations using Gauss-Elimination method: (10)
- $$2x_0 + 3x_1 + 5x_2 = 23$$
- $$3x_0 + 4x_1 + x_2 = 14$$
- $$6x_0 + 7x_1 + 2x_2 = 26$$
- b) Write a program which evaluates  $\int_a^b \frac{x}{1+4x} dx$  using Simpson's 1/3<sup>rd</sup> rule (10)

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