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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), 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). (10)

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). Determine the root correct to three significant digits using Regula-Falsi method. (10)

b) Develop a program to find out root of the equation $x = \frac{1+e^{-x}}{2}$ using successive approximation method. (10)

8 a) Evaluate $\int_{2.2}^{2.8} \frac{x}{1+3x}\,dx$ using Simpson's 1/3rd rule. (10)

b) Write a program which evaluates numerically $\int_0^1 \frac{1}{1+x^3}dx$ using trapezoidal rule taking 10 intervals (10)

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 $\int_a^b \frac{x}{1+4x}$ using Simpson's 1/3rd rule (10)

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