Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Second Semester B.Tech Degree (S, FE) Examination January 2024 (2019 Scheme)

Course Code: EST 102

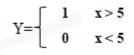**Course Name: PROGRAMMING IN C (Common to all programs)**

Max. Marks: 100   Duration: 3 Hours

PART A

Answer all Questions. Each question carries 3 Marks   Marks

1	Describe the memory hierarchy of a computer with the help of a diagram.	(3)
2	What is the purpose of flow charts in problem solving? Draw a flow chart to find the largest of three numbers.	(3)
3	Explain the syntax of ternary operator in C. Write a program for evaluating the function Y using ternary operator.	(3)

$$Y = \begin{cases} 1 & x > 5 \\ 0 & x < 5 \end{cases}$$

4	Give the syntax of switch statement. Write a program to check whether a given number is positive, negative or zero using switch.	(3)
5	List the different ways in which a 1-Dimensional and 2-Dimensional array can be initialized.	(3)
6	Develop a C program to check whether a character is present in a string.	(3)
7	Compare and contrast structure with union.	(3)
8	List out the merits and demerits of recursion. Write a recursive procedure in C to find the factorial of a number.	(3)
9	Explain how a pointer is assigned with a structure in C and how the member variable of structure is accessed using pointer?	(3)
10	What is the role of fseek() in C? Solve the given scenarios with fseek(), assume file pointer is at 10th character and there are 100 characters in the file. (a) Set file pointer to the last character in the file. (b) Set file pointer to the beginning of the file.	(3)

PART B

Answer any one Question from each module. Each question carries 14 Marks

11	a	Draw the flowchart of bubble sort. Trace the steps for the input [5,3,1,7,9].	(10)
	b	List out the difference between compiler and interpreter.	(4)

OR

12	a	Write an algorithm for linear search. Demonstrate the working for the given array 23,34,41,65,70 and element to be searched is 65.	(10)
	b	Writes short notes on Von Neumann architecture.	(4)
13	a	With suitable examples describe the conditional statements in C.	(8)
	b	Write a C program to check whether a given number is perfect or not (A perfect number is a positive integer that is equal to the sum of its factors excluding the number itself).	(6)

OR

14	a	Explain different operators in C.	(8)
	b	Write a C program to check whether a counting number is prime or not.	(6)
15	a	Write a C program to multiply two matrices. The order and elements of each matrix should be accepted from the user.	(10)
	b	How can we concatenate two strings without using string handling functions?	(4)

OR

16	a	Matrix A is said to be symmetric if $A=A^T$ and Skew Symmetric matrix if $A = - A^T$. Write a C program to check whether a matrix is symmetric or skew symmetric	(8)
	b	Develop a C program to accept a string from the user. Display the count of upper case and lowercase characters in that string.	(6)
17	a	Implement a C program to accept Admission number and Name of N students in a class and to prepare a Roll List based on the alphabetical order of their Names.	(8)
	b	Describe different methods of parameter passing in functions and implement a program to swap two variables using those methods.	(6)

OR

18	a	What are function prototypes? Using functions develop a C program to find ^nC_r	(6)
	b	Explain different storage classes in C with suitable example.	(8)
19	a	Develop a c program to read numbers from a file and write odd numbers to one file and even numbers to another file.	(8)

b   Explain with suitable examples, how & and * operators are used with pointer variable.   (3)

c   Predict the output of the following C program code.   (3)

void main () {

int a[] = {30, 20, 10};

printf("%d %d %d\n", *a, *a+1, *(a+1));

}

OR

20 a   Write a C program using pointers to compute the Sum and Mean of all elements stored in an array of n real numbers.   (8)

b   With suitable example explain different modes for opening a file in C?   (6)

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