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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. (3)
 - (a) Set file pointer to the last character in the file.
 - (b) Set file pointer to the beginning of the file.

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 (10)
23,34,41,65,70 and element to be searched is 65.
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 ${}^n C_r$ (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)
