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BMS College of Engineering, Bengaluru-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)

July / August 2017 Supplementary Semester Examinations

Course: Programming with C++ **Duration: 3 Hours**
Course Code: 15CI3GCPCP **Max Marks: 100**
Date: 26.07.2017

Instruction: Answer any five full questions choosing one from each unit.

UNIT-I

1.	a)	With a neat diagram describe various parts of a computer.	**08**
	b)	Write a C++ program that simulates the motion of a projectile.	**08**
	c)	Write a C++ program to add all the odd numbers and all the even numbers till a given N.	**04**

UNIT-II

2.	a)	Write a C++ program to add N numbers entered by the user except the numbers which are multiples of 4.	**05**
	b)	Differentiate between actual and formal parameters. Write a C++ program to compute the GCD of three non-zero integer numbers using functions.	**08**
	c)	What is the need for recursion? Write a C++ program for recursive linear search.	**07**

UNIT-III

3.	a)	Explain the concept of digital images and histograms. Develop a C++ program for histogram equalization.	**10**
	b)	Explain how binary search is a better approach compared to linear search. Illustrate how binary search and linear search techniques are applied to the following set of elements where the search key is 32. {1, 3, 4, 5, 7, 30, 32, 41, 53, 61, 77, 81}	**10**

OR

4.	a)	Given a matrix A (m x n), develop a C++ program to find the transpose of the same and output both the input matrix and the transposed matrix.	**10**
	b)	Develop a C++ program for sorting an array of N elements using Selection Sort. With an example, explain when does the algorithm take more time for execution.	**10**

UNIT-IV

5.	a)	Demonstrate the usage of pointers with dynamic memory with an example program.	**06**
	b)	Discuss about the software life cycle.	**06**

c) Write a C++ program that reads a sentence and prints **08**
(i) frequency of occurrence of each of the vowels
(ii) the number of words.
(iii) the count of numerical digits (0..9)

UNIT-V

6. a) Write a C++ program to store records of bank customers using structures. Each record must comprise details of customer name, account number, account type and balance amount. Write a function called search to find whether a given account number is present in the entire set of records or not and print customer details accordingly. **10**

b) Explain about nested structures with an example. **04**

c) Write a C++ program to read the name and marks of n students from user and store them in a file. **06**

OR

7. a) Write a C++ program that reads several different names and addresses from the user, rearranges the names into alphabetical order, and then writes out the alphabetized list. Make use of structure variables within the program. **08**

b) Write a C++ program to read a line of text from a data file and display it on the screen. **06**

c) Compare the use of fread and fwrite functions with the use of fscanf and fprintf functions. How do the syntactical rules differ? For what kind of applications is each group of functions well suited ? **06**

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