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**P.E.S. College of Engineering, Mandya - 571 401**  
*(An Autonomous Institution affiliated to VTU, Belgaum)*  
**First Semester, B.E. - Make - up Examination; Jan/Feb – 2016**  
**Computer Concepts and ‘C’ Programming**  
 (Common to all Branches)

*Time: 3 hrs*

*Max. Marks: 100*

*Note: Answer any FIVE full questions, selecting ONE full question from each unit.*

**UNIT - I**

- 1 a. With an example describe the basic structure, process of computation and execution of C programs. 8
- b. What are tokens? Explain with examples. 6
- c. What is type casting? Explain the need for different type castings in C. 6
- 2 a. What are the primary functions of an operating system? How MS-windows is different from Linux? Give at least two reasons to support your answer. 8
- b. Describe the different data types available in c language. 6
- c. Classify the operators based on number of operands. Give examples. 6

**UNIT - II**

- 3 a. How do you classify IO functions in C? Explain briefly. 6
- b. With the help of flowchart, illustrate the selection process of switch statement. 6
- c. Write a C program to generate n-terms of Fibonacci series. Also count the number of odd and even and print the result with suitable messages. 8
- 4 a. List and explain with examples, the type specifiers used in formatted IO functions. 6
- b. What is meant by unconditional branching statements? Explain different types with examples. 8
- c. Develop a C code to generate and print prime numbers between 151 and 200. Program should also count the number of primes and print. 6

**UNIT - III**

- 5 a. What is an array? Why an array is called a data structure? With examples, explain how to declare and initialize two-dimensional array. 8
- b. Develop a C code to accept and store N integers. Compute the sum of positive and negative numbers separately. Print the result with suitable message(s). 7
- c. Develop a C code to concatenate two strings without using library functions. Given strings are, str1= “MANDYA” and str2 = “SUGAR”, after concatenation str1 must contain “MANDYASUGAR” as output. 5
- 6 a. Develop a C code to accept and store N integers. Arrange the elements using selection sort algorithm. 7

- b. Develop a C code to accept N x N matrix and find their trace. 6
- c. How does a string differ from numeric array? With examples, explain how to declare and initialize strings. 7

#### UNIT - IV

- 7 a. How to achieve modular programming in C? Explain with an example. 6
- b. Write a C function is Armstrong (num) that accepts an integer argument and returns '1' if the number is an Armstrong Number or a '0' otherwise. Write a C program that invokes this function to determine whether a given number is Armstrong number or not. 8  
[Hint:  $153 = 1^3 + 5^3 + 3^3$  // 153 is an Armstrong number.
- c. What is a pointer? Using pointer, write a program in "C" to find the sum and mean of all elements in an array. 6
- 8 a. Depending on whether argument(s) are present or not and whether a value is returned or not discuss the category of functions with examples. 10
- b. Briefly explain, the parameter passing mechanism in C. 4
- c. How do you declare and initialise pointer? Explain using a suitable example. 6

#### UNIT - V

- 9 a. How are structures and unions differs from each other? Explain with suitable examples. under what circumstances each is desirable 6
- b. What do you mean by array of structures? How array of structure can be initialized? Give example. 8
- c. Write a C program that opens a text file and reading data from it. 6
- 10 a. Write a C program to maintain a record of "N" employees details using an array of structures with four fields (Emp.ID, Name, Age and Gross Pay] Each field is of a suitable data type. Print the Gross pay of the employee given employee name as input. 10
- b. Describe the function from fopen ( ) fclose ( ), fscanf ( ) and fprintf ( ) with examples. 10

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