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PES University, Bengaluru-85
(Established under Karnataka Act No. 16 of 2013)

UE17CS151

DECEMBER 2018: END SEMESTER ASSESSMENT, B.TECH, II-SEMESTER

UE17CS151 – PROBLEM SOLVING WITH C

Time: 03 Hours

Answer All Questions

Max Marks: 100

All the questions are compulsory
Draw the diagrams wherever necessary
Figures to the right indicates marks

Q. No		Question	Marks
	a)	What is the basic structure of a C program? Explain each section in brief.	6
1	b)	1. Write whether the following variable declarations are valid or invalid. Justify your answer a. float (area); b. float max_value; c. int 1 st rank; 2. Which function allows a C program to read data from keyboard? Write the format of that function.	3+2
	c)	What are primary data types in C? Explain with example.	4
	d)	What is Decision Making and Branching? Write the syntax of if-else statement with a sample program.	5
2	a)	What is array? How array declaration is done? Write a program to count frequency of a given element in an array.	6
	b)	What is use of functions in C Programming? Write a program to print whether the entered number is positive or negative using function. (Consider zero as non negative)	5
	c)	What are different string manipulation functions in C? Write any four functions with an example.	5
	d)	What will be the output of following sample codes? 1. #include<stdio.h> int main() { int a[] = { 1, 2, 3, 4, 5} ; int *ptr; ptr = a; printf(" %d ", *(ptr + 1));	4

		<pre> return 0; } 2. #include<stdio.h> int main() { int a = 5; int *ptr ; ptr = &a; *ptr = *ptr * 3; printf("%d", a); return 0; } 3. #include <stdio.h> int main() { int i = 0, j = 0; while (i<5 & j<10) { i++; j++; } printf("%d %d", i, j); } 4. #include int main(){ int x=5,y=10,z=15; printf("%d %d %d", x,y,z); return 0; } </pre>	
3	a)	What is Structure? How to define a structure? Write any two differences between an Array and Structure	5
	b)	<p>Assume that the size of an integer is 4 bytes and size of character is 1 byte. What will be the output of following program?</p> <pre> #include <stdio.h> union test { int x; char arr[8]; int y; } u; int main() { </pre>	2

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		printf("%u", sizeof(u)); return 0; }	
	c)	Write a program to define a structure for student details such as student name, student id and branch. Assign values to each structure member and display the same. Assume your own variable names for structure members.	8
	d)	How dynamic memory allocation is done in C? Write a program to allocate 5 integers dynamically by taking inputs from the user and display.	5
4	a)	Write a c program to print all natural numbers from 1 to n using recursion.	5
	b)	State True or False for the following statements. 1. Array of structures is not allowed in C 2. Use of Parameter names in function declaration is optional 3. Nesting of functions is not supported in c 4. A function can be called by using function name followed by list of parameters if any.	4
	c)	Write a C program to add two numbers using pointers.	4
	d)	Using Logical AND operator, write a program to find largest number among three numbers.	7
5	a)	Write short notes on: 1. Conditional Compilation 2. Enum	8
	b)	What is preprocessor directives? Explain any two preprocessor directives with example	5
	c)	Write a program in c to enter 10 numbers from keyboard and print the sum of all the numbers which are divisible by 2. Also print the count of numbers divisible by 2.	4
	d)	Why file handling is important? Write any 4 file related operations.	3