R19

SET - 1

I B. Tech I Semester Regular Examinations, January - 2020
PROGRAMMING FOR PROBLEM SOLVING USING C
(Com. to EEE, ME, ECE, Chem E, EIE, Auto E, Min E, Pet E)

Time: 3 hours   Max. Marks: 75

Answer any five Questions one Question from Each Unit
All Questions Carry Equal Marks
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1. a) How are signed and unsigned integers stored? Explain with an example. (8M)
   b) What is scope of variable? Explain block scope, function scope program scope and file scope with an example program. (7M)

Or

2. a) How are the expressions evaluated in C? Explain the role of precedence and associativity in it. Give example. (8M)
   b) Write a short note on basic data types that the C language support. Illustrate with a C program. (7M)

3. a) Explain the syntax of event and counter controlled loops used in C language with an example. (8M)
   b) Write a program using do-while loop to read the numbers until -1 and also count the positive, negative and zeros encountered by the users. (7M)

Or

4. a) In detail, discuss various sized integer types supported by C. Give their storage and value ranges. (8M)
   b) Explain pre and post tests used in repetition. Write a C program to print the average of numbers entered by the user. (7M)

5. a) Write a program using structures to read and display the information about entire faculty of a particular department. (8M)
   b) Explain reversing string, concatenating strings, extracting substring from a string operations. (7M)

Or

6. a) Write a short note on operations on arrays. And write a program to print the position of smallest of 'n' numbers using arrays. (8M)
   b) What is the advantage of structure? Differentiate it with union and arrays. (7M)

7. a) What is address arithmetic in C? Explain different arithmetic operations that can be performed on pointers. (8M)
   b) Write a program to find the mean of 'n' numbers using arrays. (7M)

Or

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8. a) With suitable examples explain different dynamic memory management functions in C. (8M)

   b) How are generic pointers different from pointer variables and also differentiate ptr++ and ++ptr. (7M)

9. a) What is recursive function? Explain different types of recursion with examples. (8M)

   b) What are various standard library input/output functions used in C language? Explain with simple program. (7M)

Or

10. a) How to pass pointers to functions? Explain with an example program. (8M)

    b) Write a short note on Inter function communication and streams. (7M)

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SET - 2

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Time: 3 hours
Max. Marks: 75

Answer any five Questions one Question from Each Unit
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1. a) Describe briefly the numbering system used in computers. Explain with suitable examples. (8M)

    b) Illustrate the various storage classes used in C program. Explain each with a simple program. (7M)

Or

2. a) Explain characteristics, structure, uses of C and compiling and execution of C with suitable example program. (8M)

    b) Differentiate type casting and type conversion with a sample program. (7M)

3. a) What is Shift operation? Perform different types of shift operations on 101110011. (8M)

    b) Write a C program to read numbers until -1 is encountered and also count the positive, negative and zeros encountered by the users using while loop construct. (7M)

Or

4. a) Explain the concepts of multiway selection. And write a program to determine whether an entered character is vowel or not. (8M)

    b) What are the applications of looping constructs? Give an example. (7M)

5. a) Explain the concept of multidimensional array and perform matrix multiplication using arrays. (8M)

    b) Explain the utility of 'typedef' keyword. Write a program to illustrate it. (7M)

Or

6. a) What is morse code? Implement morse code in C. (8M)

    b) Write a program to find the smallest of three numbers using structures. (7M)

7. a) What is the role of L value and R Value in pointer arithmetic? Explain in detail. (8M)

    b) Write a program that uses an array of character pointers to display the name of the day corresponding to the given number. (7M)

Or

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8.   a)   In detail explain the pointers and arrays of 2D and 3D with suitable examples.   (8M)

    b)   Write a program to add, that uses an array of function of pointers, subtract,   (7M) multiply and divide two given numbers.

9.   a)   How to pass parameters to functions? Explain each with an example.   (8M)

    b)   What kind of files and functions for files are used in C language? Explain in detail.   (7M)

<div align="center">Or</div>

10. a)   Differentiate Iterative functions and recursive function and write the recursive   (8M) function to find the solution to towers of Hanoi problem.

    b)   Explain various character input/output functions supported by C.   (7M)

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Time: 3 hours   Max. Marks: 75

Answer any five Questions one Question from Each Unit
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1. a) What is the role of one's and two's compliment in storing and retrieving numbers. (8M)
       Perform addition and subtraction with this on suitable example.

    b) Explain the following files used to construct the C program. (7M)
        (i) Source code files
       (ii) Object files-Binary Executable files
       (iii) Header files

                                      Or

2. a) Explain the terms variables and constants. How many types of variables supported (8M)
       by C? Illustrate with a sample program.

    b) Write a C program to count number of vowels in an input text taken through (7M)
       command line arguments.

3. a) Discuss the usage of bitwise logical operators used in C? Differentiate them from (8M)
       logical operators with suitable program.

    b) Write a C program to determine the character entered by user. And also explain (7M)
       the control structures used in it.
                                      Or

4. a) Why switch case is better than nested if? Why you need break, default statement (8M)
       in switch case? Explain with an example program.

    b) Write a C program to print. And also explain the looping concepts used in it. (7M)
       1
       1 2
       1 2 3
       1 2 3 4
       1 2 3 4 5

5. a) How to extract substring either from left or right of the string? Explain through a (8M)
       sample program.

    b) Using structures write a program to read and display the information of all the (7M)
       students in a class.
                                      Or

6. a) What do you understand by union? How to access the members of union? And (8M)
       give the applications of it.
    b) Write a program to interchange the largest and smallest elements in an array. (7M)

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7. a) Illustrate generic pointers. How to pass arguments to functions using pointers? Give example. (8M)

    b) How can you declare pointer variable? Differentiate a variable address and variable value. How to access variable value using pointers? Explain. (7M)

Or

8. a) Give the syntax and explain arrays of pointers in detail. (8M)

    b) Explain the term dynamic memory allocation and the terms malloc(), calloc and realloc() functions. (7M)

9. a) Explain the following with respect to functions: (8M)
(i) Function prototype
(ii) Function call
(iii) Returning from function

    b) Explain in detail about formatting input/output functions supported by C. (7M)

Or

10. a) Using recursion write a program find the GCD of two numbers (8M)

    b) What do you mean by streams? What are the applications of it? Differentiate text and binary streams. (7M)

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SET- 4

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Time: 3 hours
Max. Marks: 75

Answer any five Questions one Question from Each Unit
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1. a) How to store real numbers in computer system? Demonstrate and explain the role (8M) of normalization, sign, exponent and mantissa in storing and retrieving of real numbers.

   b) Illustrate the input and output streams in C with printf() and scanf(). How to detect (7M) errors during data input? Explain.

Or

2. a) Write a program to read an integer, then display the value in decimal, octal and (8M) hexadecimal notation.

   b) Evaluate the expression $a - b / c * d + e - + + a$. And explain the concepts used in (7M) it.

3. a) Give syntax for conditional branching statement? Write an example program to (8M) demonstrate nested if statement?

   b) Write a program to classify a given number is prime or composite using for loop. (7M)

Or

4. a) Using switch case construct write a C program that finds the day for a given date. (8M)

   b) Explain the structure of While loop. And illustrate it to display the binary (7M) equivalent of given decimal number.

5. a) With respect to arrays explain the following: (8M)
   (i) Declaration of arrays
   (ii) Accessing elements of array
   (iii) Storing values in arrays.

   b) Write a C program that converts lower case string to upper case and vice-versa. (7M)

Or

6. a) Explain the concepts of structure declaration, initialization, accessing the members (8M) of structure.

   b) Write a C program to compare two strings. (7M)

7. a) Explain the concepts of pointer expressions and pointer arithmetic with examples. (8M)

   b) Write a program to convert floating point number into integer using pointers. (7M)

Or

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8. a) Write the syntax and explain the concepts of pointers, declaring pointer variables and null pointers.   (8M)

    b) Using pointers in functions write a C program to perform arithmetic operations on two integers.   (7M)

9. a) Why functions are needed in C? Write program using functions to swap the values of two variables.   (8M)

    b) Write a program to calculate factorial of a number with recursion and without recursion.   (7M)

<p align="center">Or</p>

10. a) Differentiate "call by value" and "call by reference" types of passing parameters to functions.   (8M)

    b) Illustrate the concept of converting file types.   (7M)