

**I B. Tech II Semester Regular Examinations, December - 2020**  
**PROGRAMMING FOR PROBLEM SOLVING USING C**  
 (Com. to CE, CSE, IT, Agri 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) What is an Identifier in C Programming language? Discuss various rules to be followed for identifiers with suitable examples. (8M)  
 b) Write a C program to find the size of the integer, float, double and char data types. (7M)

Or

2. a) Elaborate on various concepts behind command line arguments. Write a C program to add two numbers using command line arguments. (8M)  
 b) Write a C program to convert Fahrenheit to Celsius degree. (7M)
3. a) Explain switch construct in C programming language with syntax. Illustrate with a C program to check whether a given alphabet is "VOWEL" or "CONSONANT" using switch case. (10M)  
 b) Write a C program to check whether a given number N is perfect number or not. (A perfect number is an integer which is equal to the sum of its proper divisors) (5M)

Or

4. a) Explain pretest and posttest loops in C language with syntax and an example each. (8M)  
 b) Write a C program to count the total number of digits of an integer N. (7M)
5. a) Write a short note on the following string handling functions with examples each (i) strcat() (ii) strcmp() (iii) strlen() (8M)  
 b) Write a C program using structure to define Student record containing Student Regd Number, Name, Age, Contact Number, Branch and Aggregate. Also illustrate the code to read 10 records and then display them. (7M)

Or

6. a) What is the importance of double dimensional arrays? Write a short note on initialization of double dimensional arrays with suitable examples. (8M)  
 b) Write a C program to read a matrix and find the sum of its diagonal elements. (7M)
7. a) Define a pointer. Explain the concept of passing arrays to functions using pointers. (8M)  
 b) Write a C program to find the sum of N numbers entered by the user using malloc() function. (7M)

Or

8. a) Distinguish between malloc() and calloc() functions used for dynamic memory allocation in C. (8M)
- b) What is the importance of pointer to pointer? Illustrate it with a C program. (7M)
9. a) Explain the following file functions with examples each (8M)  
(i) fseek() (ii) fputs()
- b) Write a C program to copy the contents of one file to another file. (7M)

Or

10. a) Differentiate between the following: (8M)  
(i) Function definition and function declaration  
(ii) Actual parameter and formal parameter
- b) What do you mean by Recursion? Write a program to find factorial of given number using recursion. (7M)

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1. a) "C provides provision for converting one data to another data type" - Support this statement with proper reasoning. (8M)  
 b) Write a C program to swap two numbers without using third variable. (7M)  

Or
2. a) Evaluate the following number system conversions. (8M)  
 (i)  $[195]_{10} = [?]_{16}$  (ii)  $[2A9]_{16} = [?]_8$   
 (iii)  $[763]_8 = [?]_2$  (iv)  $[110010101]_2 = [?]_{10}$   
 b) Write a C program to find the perimeter of the circle. (7M)
3. a) Write a short note on the following: (8M)  
 (i) Logical Bitwise Operators  
 (ii) Shift Operators  
 b) Write a C program to find the factorial of a given number using iteration. (7M)  

Or
4. a) Distinguish between break and continue with suitable examples. (5M)  
 b) Write a C program to print the following pyramid pattern upto  $N^{\text{th}}$  row where N represents the number of rows to be printed. (10M)  

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*
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***
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*****
      
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5. a) Write a short note on the following string handling functions with examples each (8M)  
 (i) strchr()  
 (ii) strlen()  
 b) Write a C program to find the maximum element in the given array of elements. (7M)  

Or
6. a) "C supports giving alias names to the variables" - Support this statement with suitable explanation and examples. (8M)  
 b) Write a C program to find the number of Uppercase and Lowercase alphabets in the given string. (7M)

7. a) What is pointer arithmetic? Explain various valid operations that can be operated on pointers. (8M)
- b) Write a C Program to access Array elements using pointers. (7M)

Or

8. a) What is the importance of Preprocessor directive in C programming language? Write a short note on the following C Preprocessors. (8M)  
(i) #define (ii) #pragma
- b) "Pointers can be used to declare the functions" - support this statement with one programming example. (7M)
9. a) Differentiate between user defined functions and pre-defined functions. Also explain the purpose of function prototype. (8M)
- b) Write a C program to create file "odd.txt" to store all odd numbers between 1 and n. (7M)

Or

10. a) Differentiate between Call-by-value and Call-by-reference. (10M)
- b) Write a C program to add two complex numbers by passing structure to a function (5M)

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1. a) Define token? Explain different tokens available in C programming language. (8M)  
 b) Write a C program to find the roots of a quadratic equation covering all necessary conditions. (7M)  
 Or
2. a) Elaborate on primitive data types in C programming language with example. (8M)  
 b) Write a C program to find the sum of the following series  $1+3^2+5^2+7^2+\dots N^2$  where N is an odd number. (7M)
3. a) Mention syntax of different branching statements and explain its working. (10M)  
 b) Write a C program to compare the largest of two numbers using conditional operator. (5M)  
 Or
4. a) State the drawback of ladder if-else. Explain how you resolve it with suitable example. (8M)  
 b) Write a C program to find the sum of N natural numbers using for loop. (7M)
5. a) How does a structure differ from an array? Explain with a suitable example. (7M)  
 b) Write a C program to find the transpose of a given matrix. (8M)  
 Or
6. a) Describe in detail about string input/output handling functions with examples. (7M)  
 b) Write a C program to remove all occurrences of word "the" and "The" from an input string. (8M)  
 For Example:  
 Input: The Dhillon Theatre is now the Fun Republic  
 Output: Dhillon atre is now Fun Republic
7. a) How dynamic memory allocation is done with pointers? Illustrate. (7M)  
 b) Write a C program to show how to access structure elements in functions. (8M)  
 Or
8. a) Explain the difference between realloc () and free () with a suitable example. (7M)  
 b) Write a C program to access private member variables of a class using pointers. (8M)

9. a) What are formal and actual arguments in function? Give example. (5M)
- b) Write and explain the following types of functions with a help of an example program for each. (10M)
- (a) Function with no arguments & no return values
  - (b) Function with arguments & no return values.

Or

10. a) What functions are used for file positioning? State the SEEK-constants used in fseek function and explain the meaning. (7M)
- b) Write a C program to merge two files into a single file. (8M)

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1. a) Write the basic structure of a C program. Explain each section briefly with suitable example. (8M)  
 b) Write a C program to compute simple interest. (7M)  
 Or
2. a) Discuss various constants available in C programming language with example. (8M)  
 b) Write a C program to find the average of 10 numbers. (7M)
3. a) Illustrate on Counter controlled loops with examples. (8M)  
 b) Write a C program to check whether the given integer is palindrome or not. (7M)  
 Or
4. a) Explain increment and decrement operators with examples. (5M)  
 b) Write a calculator program in C programming language to perform addition, subtraction, multiplication and division using switch statement. (10M)
5. a) Enumerate the concept of structure and compare with union. (6M)  
 b) What is an array? Write a C program to arrange the given 10 numbers in ascending order using one dimensional array. (9M)  
 Or
6. a) How structures are nested in structures with suitable example? (5M)  
 b) Define a structure for an Employee having Employee Name, Employee Code, Basic Pay, Dearness Allowance, HRA, PF, Gross pay, Net pay. Take an array of 10 employees. Write "C" functions to: (10M)
  - a) Accept data for Employee Name, Employee Code and Basic Pay for all the employees.
  - b) Compute:
    - a)  $HRA = 20\% \text{ of Basic Pay} + \text{Dearness Allowance}$
    - b)  $PF = 12\% \text{ of Basic Pay} + \text{Dearness Allowance}$
    - c)  $\text{Net Pay} = \text{Gross Pay} - PF$
7. a) Define pointer in C language and compare pointer to an array and array of pointers. (7M)  
 b) Declare an array of three function pointers where each function receives two integers and return float. (8M)

Or

1 of 2

8. a) What is dangling pointer in C? Explain with a suitable example. (7M)
- b) Write a C program to print the following pattern. (8M)
- ```
5 4 3 2 1
 4 3 2 1
  3 2 1
   2 1
    1
```
9. a) Differentiate between text files and binary files. (5M)
- b) Write and explain the following types of functions with a help of an example program for each (10M)
- (a) Function with arguments & return values
  - (b) Function with no arguments & return values.

Or

10. a) What is stream? Describe two different methods of creating a stream oriented file. (7M)
- b) Write a program to count number of words and lines in a file. (8M)