

Question Paper

Exam Date & Time: 01-Mar-2023 (02:30 PM - 05:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER B.TECH. EXAMINATIONS - FEBRUARY/MARCH 2023
SUBJECT: CSE 1071 / CSE_1071 - PROBLEM SOLVING USING COMPUTERS
(MAKEUP)

Marks: 50

Duration: 180 mins.

Answer all the questions.

- 1A) Differentiate between compiler and interpreter on the following parameters: (3)
i) Method of processing
ii) time requirement
iii) Ease of debugging
(1+1+1 = 3 marks)
- 1B) Explain in detail the compilation process for a C program. (3)
- 1C) i) Draw a flowchart for the following: (4)
Accept price and quantity of a product as an input from the user then calculate the bill amount as follows: provide 10% discount for the bill amount 5000 and above, 5% discount for the bill amount 1000 and above.
ii) Differentiate between implicit and explicit type conversion.
(3+1 = 4 marks)
- 2A) A certain grade of steel is graded according to the following conditions: (5)
i) Hardness must be greater than 50
ii) Carbon content must be less than 0.7
iii) Tensile strength must be greater than 5600
The grades are as follows:
Grade is 10 if all three conditions are met
Grade is 9 if conditions (i) and (ii) are met
Grade is 8 if conditions (ii) and (iii) are met
Grade is 7 if conditions (i) and (iii) are met
Grade is 6 if only one condition is met
Grade is 5 if none of the conditions are met
Design and Develop a program in C, which will require the user to give values of hardness, carbon content and tensile strength of the steel and display the grade of the steel using if else ladder.
Proper interpretation of the conditions using if else ladder statements:
Correctness of Input and Output:
(3+2 = 5 marks)
- 2B) Write a program to calculate overtime pay of 10 employees. Overtime is paid at the rate of Rs. (3)
12.00 per hour for every hour worked above 40 hours. Assume that employees do not work for fractional part of an hour. (Make use of while loop only).
Right usage of Input and Output:
Correctness of Logic:
(1+2 = 3 marks)
- 2C) Write a C program using conditional operator to determine whether the character entered through (2)
the keyboard is a lower-case alphabet or not.
Use of conditional Operators (Syntax and its placement):

Overall Logic and Accuracy of Output:

(1+1 = 2 marks)

- 3A) Write a C program to read your name and display its characters in alphabetical order. (3)
- 3B) Write a C program that reads a square matrix, checks whether the input matrix is Upper Triangular or not. Display "Upper Triangular matrix" if it is Upper Triangular, otherwise display "Not an Upper Triangular matrix". (3)
(1½+1½ = 3 marks)
- 3C) Write a C Program to sort an array of integers, both in ascending and descending order. (4)
- 4A) Write a C program to print all perfect numbers in a given range using the function. (3)
- 4B) i) How many function calls occur while calculating factorial three (3) using recursion? Depict the same through pictorial representation. (5)
ii) Write a C program to convert a decimal number to binary using recursion. (2+3 = 5 marks)
- 4C) Find the Output of a recursive function: (2)
- ```
#include<stdio.h>
void main ()
{
myFun(25);
}
void myFun(unsigned int n)
{
 if(n != 0)
 {
 myFun(n/2);
 printf("%d", n % 2);
 }
}
```
- 5A) Write a C program to compute the sum of n array elements using a pointer. (3)
- 5B) Write a C program to create a structure of student with the following fields: name and marks. Read the name and marks of n students in an array of structure and print the names and marks of the students who got less than the average marks. (4)
- 5C) Explain any three (3) cyber-crimes where computers are used to commit the crime. (3)

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