



**MANAV RACHNA  
UNIVERSITY**   
(FORMERLY MANAV RACHNA COLLEGE OF ENGINEERING  
NAAC ACCREDITED 'A' GRADE INSTITUTION)

Declared as State Private University under section 2f of the UGC act, 1956

## DEPARTMENT OF MECHANICAL ENGINEERING

*"T3 EXAMINATION, MAY 2018"*

**Semester:** Second

**Subject:** Structured Programming

**Branch:** ME & IEM

**Course Type:** Core

**Time:** 3 Hours

**Max.Marks:** 80

**Date of Exam:** 18/05/2018

**Subject Code:** CSH 101-T

**Session:** Morning

**Course Nature:** Hard

**Program:** B.Tech

**Signatures:** HOD/Associate HOD:

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### Part-A [20]

Each Question carries two marks

#### Q1. Short Answer Type Questions

- Write the union declaration for the entity **CUSTOMER** which has following data members:  
**cust\_name, cust\_id, e-mail, DOB, salary.**
- What is the purpose of **typedef** and **sizeof** functions? Explain the syntax with example
- What are the different steps to use a file?
- Differentiate between **type casting** and **type conversion**?
- What are the different types of memory allocation and de-allocation functions?
- Write a program in C to subtract two nos. through the use of function macro or preprocessor directives.
- Find out the 2's complement of the decimal number 15 and 7.
- Discuss two ways of reading a string from the keyboard.
- What are the benefits of Dynamic Memory Allocation over static allocation?
- Write the function **declaration, call, and definition header** for the function SWAP having **an array and size of array as parameters.**

### Part B [30]

Each Question Carries 15 Marks ( Attempt Any Two)

#### Q2

- Differentiate between structures and arrays. [4]
- Create a structure of 10 EMPLOYEES having data members : **E\_NAME, E\_ID, No\_of\_Hrs\_Worked.**  
read and display the data of 10 employees [6]
- Write a program to search a number entered by the user in the list of elements using binary search [5]

Q3. What is sorting? Apply bubble sorting on the given array elements:

[ 5, 2, 9, 3, 4, 10, 1, 6 ]

[8]

- (a) What is enumeration? How is enumeration represented? Give a suitable example. [4]
- (b) Define preprocessor directives. Explain the use of #define preprocessor directive with example. [3]

Q4

- (a) Write a program to read the details of student and then print it on the screen as well as write it to the file STUDENT.DAT [3]
- (b) Write a program in C to read a file character by character and display it simultaneously on the screen [4]
- (c) Differentiate Storage classes in C? [8]

**Part 'C' - [30]**

**Each Question Carries 15 Marks ( Attempt Any Two)**

Q5:

- (a) Perform binary conversion of the following decimal numbers and also convert the output binary string to the given decimal number
- i) 16      ii) 24      iii) 37      iv) 59 [4]
- (b) Write a program in C to find larger of two numbers using **conditional operator** [2.5]
- (c) Differentiate between **malloc () and calloc ()** function. [2.5]
- (d) What are bitwise and shift operators .Explain with example all the bitwise and shift operators [6]

Q6:

- (a) Consider the structure:

```
struct patient {  
    int P_ID;  
    int date_of_appointment;  
    char name[20];  
};
```

- I. Declare a pointer variable of a structure. [1]
- II. Read the data members from the user. [2]
- III. Create a function **display () which accepts the structure through pointer** and displays the value of data members. [4]
- (b) What is String? Discuss some of the operation that are performed on strings with example. [6]
- (c) Differentiate between string and character. [2]

Q7. Write a short note for the following:-

- (a) Scrum
- (b) Git Hub
- (c) SCM

[5+5+5]