



Mid Term (Odd) Semester Examination October 2024

Roll no.....

Name of the Course and semester: **B. Tech Ist Semester**

Name of the Paper: **FUNDAMENTALS OF COMPUTERS & INTRODUCTION TO PROGRAMMING**

Paper Code: TCS101

Time: 1.5 hour

Maximum Marks: 50

Note:

- (i) Answer all the questions by choosing any one of the sub questions
- (ii) Each question carries 10 marks.
- (iii) Please specify COs against each question.

Q1. (10 Marks)

- a. Draw a detailed diagram illustrating the computer memory hierarchy, including speed and cost parameters, and explain how data is stored in main memory. Also differentiate Static Ram and Dynamic Ram. (CO1)

Or

- b. List the advantages of Algorithm and flowcharts. How these can assist in problem solving phase?

Draw a flowchart to convert inputted seconds to Hours, Minutes, Seconds.

Sample Input: Enter time in Seconds-6837

Output:

Hour-1

Minute-53

Seconds-57

(CO1)

Q2. (10 Marks)

- a. (i) Two or more computers need to be connected between two offices in the same city of the company. Suggest an appropriate network type (LAN, MAN, WAN etc) with possible reasons. (CO1)

- (ii) Explain any 5 Major function of Operating System. Enumerate with examples of commercially and freely available O.S in the market. (CO1)

Or

- b. (i) If the studio wants to achieve a data recording rate of 5 Mega Byte/Sec, how much total data would it generate in 7.5 hours? (CO1)

- (ii) Explain the category of Unary, Binay and ternary operators. Write a C program to find greater of three numbers using ternary operator. (CO2)

Q3. (10 Marks)

- a. (i) What potential issues might arise if type casting is not used correctly? Create a C program that demonstrates both implicit and explicit type casting, and explain how each type is implemented in the code. (CO2)
- (ii) What is an expression in C? What is difference between operator and operands? Describe the role of precedence and associativity in order of evaluation of an expression? (CO2)

Or

- b. What are the steps involved in the compilation process of a C program? and also write extension of intermediate files. (CO2)

Q4. (10 Marks)

- a. Bhogilal would like to purchase N cartons of mangoes from a fruit seller. The rate per kg is Rs. 30/kg and each carton can hold about 20 Kgs of mangoes. Further, seller gives a discount of 15% to the customer if he purchases more than 100 kgs of mangoes. Write a C program to generate the bill showing the number of kgs of mangoes purchased with amount in Rupees. (CO1)



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Or

b. Differentiate following (2.5 Marks each)

(CO1,CO2)

1. Main Memory vs Cache Memory
2. Pre increment vs Post Increment with suitable example
3. Third Generation vs Fourth Generation of Computers
4. Data vs Information

Q5.

(10 Marks)

- a. Draw a flowchart and Write a C program to calculate bill for Uttarakhand state electricity board. Uttarakhand state electricity board bill is generated on following basis: if units are less than equal to 1000, rate is 5 rs/unit if units are greater than 1000 and less than or equal to 2000, rate is 6 rs/unit if units are greater than 2000, rate is 7 rs/unit. Customer gets discount of 7.5% on total bill if total bill exceeds 6000 rupees. Print Final bill.

(CO1, CO3)

Or

- b. Predict the output of following code: (2.5 Marks Each).

Note: Also Justify your answer.

I.

```
#include<stdio.h>
int main()
{
    int x = 4, y, z;
    y = --x;
    z = x--;
    printf("%d%d%d", x, y, z++);
```

```
return 0;
}
```

II.

```
#include<stdio.h>
int main()
{
    int a,b,c,d;
    a=b=c=d=5;
    a*=b+1;
    c+=a*=4;
    printf("%d %d",a,c);
    return 0;
}
```

III.

```
#include<stdio.h>
int main()
{
    int x,y,z,k=10;
    k+=(x=5,y=x+2,z=x+y);
    printf("%d%d%d%d", x,y,z,k);
    return 0;
}
```

IV.

```
#include<stdio.h>
int main()
{
    char r=127,q=130;
    int x=r+q;
    printf("%d",x);
    return 0;
}
```