13/12/21
Afternoon

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Roll No. .....

TCS–101

B. TECH. (FIRST SEMESTER)

MID SEMESTER EXAMINATION, NOV., 2021

(All Branches)

FUNDAMENTALS OF COMPUTER AND INTRODUCTION TO PROGRAMMING

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any ***one*** of the sub-questions.

(ii) Each question carries 10 marks.

1. (a) Define Computer with an explanation of block diagram. What is memory hierarchy and its importance ? Explain with a diagram.

10 Marks (CO1)

OR

(b) Explain the following terms : 10 Marks (CO1)

(i) Memory and Storage

(ii) Compiler and Interpreter

(iii) Machine level language, Assembly level language and High-level language

(iv) Application and System software

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2. (a) Find the output :

1.

```
int main( )
{
int a = 0, b=3, c=4;
if(a = 5)
    c = 10;
else
    c = 20;
printf("%d %d %d", a, b, c);
return 0;
}
```

2.

```
void main( )
{
int x = 9, z;
float y = 5;
z = x % y;
printf("%d", z);
}
```

3.

```
void main( )
```

```
{
int a = 3;
if(a < 10)
printf("LESS");
if (a < 20)
printf("LESS");
if(a < 20)
printf("LESS");
}
```

4.

```
int main( )
{
char ch = 'A';
ch = ch + 10;
printf("%c %d", ch, ch);
}
```

5. Evaluate the following expression with steps : **10 Marks (CO2)**

$$X = 12 + 3 > 5/8 + 7 * (1 + 2 * 3) - 6$$

OR

(b) Find the output :

1.

```
int main( )
```

```
{
int a = 0, b=3, c=4;
if(a = 5)
      c = 100;
      b = 50;
printf("%d %d %d", a, b, c);
return 0;
}
```

2.

```
void main( )
{
float x = 1.0
switch(x)
{
case 1.0 : printf("hello");
            break;
case 2.0 : printf("bye");
            break;
default : printf("end");
}
```

3.

```
void main( )
```

```
{
int a = 5;
if(!!a)
printf("GOOD");
else
printf("BAD");
}
```

4.

```
int main( )
{
char ch1 = 'A';
char ch2 = 'a';
if(ch1 < ch2)
    printf("A is big");
else
    printf("a is big");
}
```

5. Evaluate the following expression with steps : 10 Marks (CO2)

$$X = 2 + 7 * 4/3 > 7 * (3 * 5 - 2) * 8$$

3. (a) Draw flowchart and write code for the given problem :

In a currency system the available denominations are of ₹ 1, 2, 5, 10, 20, 50, 100, 200 and 500. Rahul has to pay amount X to a shopkeeper in minimum number of notes. As a programmer, find a way to help Rahul

so that he can pay minimum number of notes which can be combined to make amount of ₹ X. Display the count of each denomination :

Sample Input : Amount X = 1753

Sample Output : Total number of notes : 7

10 Marks (CO3)

OR

(b) Draw flowchart and write code for the given problem :

Manish is a student of Star World Public School. His teacher gave him a task to find out the number of years, months and days in any given number of days.(input by user).

[Assumption : Consider 360 days in one-year and 30 days per month.]

10 Marks (CO3)

4. (a) Draw flowchart and write code :

Five students participated in a quiz competition organized in a university. Let m1, m2, m3, m4 and m5 are the marks obtained by the participants. The organizer of the quiz wants to know the marks of the participant who scored least. Draw flowchart and write code to help the organizer. 10 Marks (CO3)

OR

(b) Draw flowchart and write code :

Rajat wants to book ticket for a person he knows. Based upon the gender and age of the traveler, certain discount offers are available. Please help Rajat to calculate the fair.

If gender is female and age is above 60, give a discount of 5% on ticket.

If gender is male and age is above 60, give a discount of 3% on ticket.

If age is above 80 give additional discount of ₹ 500.

Otherwise, no discount. 10 Marks (CO3)

5. (a) Draw flowchart and write code to print the sum of all the even numbers between a given range p and q, where the range values are given by the user. 10 Marks (CO5)

OR

(b) Draw flowchart and write code to print sum of digits of a number using loops. 10 Marks (CO5)