Candidate ID No: _____

Charotar University of Science and Technology [CHARUSAT]

Faculty of Technology and Engineering

U & P U Patel Department of Computer Engineering

Subject: CE103 Computer Concepts & Programming

First Internal Exam **(CE/EC)**

Semester: 1st SEM B. Tech. **Maximum Marks: 30**

Date: 23/09/2015 (Wednesday) **Time: 11:10 to 12:10 a.m.**

Instructions:

(i) Attempt ***all*** the questions.

(ii) Figures to the right indicate ***full*** marks.

(iii) Make suitable assumptions and draw neat figures wherever if required.

Q-1 (a) Do as directed.

1. Find the most appropriate option for the following questions. **[02]**

(i) The operator which compares two values is

(a) assignment **(b) relational** (c) unary (d) equal

(ii) The while loop and for loop are also known as

(a) exit controlled loop (b) entry controlled loop

(c) pre-test loop **(d) both (b) and (c)**

(iii) In response to the input statement

scanf("%4d %d",&year,&code);

the following data is given by the user:

78925634 678

What values does the computer assign to the variables year and code where year and code are in integers?

(a) year = 7892 , code = 5634 (b) year = 78925634 , code = 678

(c) year = 7892 , code = 678 (d) year = 7892, code = 5634678

(iv) What would be the value of Z in the following ternary operator if the value of Y is 6?

Z = (Y! = 30)? ((Y<30)? (3 * Y + 100) : (3.5 * Y +150)) :300;

(a) 300 (b) 110 **(c) 118** (d) 150

- **½ Marks for each correct option**

2. Classify whether the following variable names are valid or invalid. If invalid specify reason. **[02]**

Variable Name	Valid/Invalid	Reasons
(a) _123	Valid	
(b) A+B	Invalid	Cannot contain special character
(c) Floats	Valid	
(d) char	Invalid	Cannot use a keyword

- **½ Marks for each Variable**

3. **Evaluate the following expression according to the precedence and associativity of the operator.** **[02]**

on = ink * act / 2 +3 / 2 * act + (2 + tig) ;
where ink = 4, tig =3.2 and act = 1.
Assume variables **on, ink** and **act** to be an **int** and variable **tig** to be **float.**

Answer:
on = 4 * 1 / 2 + 3 / 2 * 1 + (2 + 3.2)

First Pass
Step 1: on = 4 * 1 / 2 + 3 / 2 * 1 + 5.2

Second Pass
Step 2: on = 4 / 2 + 3 / 2 * 1 + 5.2
Step 3: on = 2 + 3 / 2 * 1 + 5.2
Step 4: on = 2 + 1 * 1 + 5.2
Step 5: on = 2 + 1 + 5.2

Third Pass
Step 6: on = 3 + 5.2
Step 7: on = 8

(Cut ½ marks if on = 8.2 is written because on is in int)

(b) Attempt the following questions. (Any two) **[08]**

1. Write an **algorithm** and draw a **flowchart** to read the marks of a student and classify them into different grades. If the marks secured are greater than or equal to 90, the student is awarded Grade A; if they are greater than or equal to 80 but less than 90 , Grade B is awarded ; if they are greater than or equal to 65 but less than 80, Grade C is awarded; otherwise Grade D is awarded.
    - **2 Marks for Algorithm**
    - **2 Marks for Flowchart**
2. Explain with diagram the **basic structure** of C program.
    - **2 Marks for Diagram**
    - **2 Marks for Explanation**
3. Explain **Implicit Type Conversion** and **Explicit type conversion** with example.
    - **2 Marks for Implicit Type Conversion with example**
    - **2 Marks for Explicit Type Conversion with example**
4. Explain **switch statement** with example.
    - **2 Marks for explanation**
    - **2 Marks for example**

(c) Give the difference between **compiler** and **interpreter**. **[02]**

- **Minimum 4 Difference should be written**
- **½ marks for each difference**

Q-2 (a) Attempt the following programs. (Any Two) **[10]**

1. Write a program to check whether the character is alphabet or a digit **without** using character testing functions of ctype.h library file.

   Answer:

```
#include<stdio.h>
#include<conio.h>
void main()
{
  char c;
  clrscr();
  printf("\nEnter character to be tested:");
  c = getchar();

  if(c>=65 && c<= 90)
    {
      printf("\n %c is an Upper case Alphabet",c);
    }
  else if(c>=97 && c<= 122)
    {
       printf("\n %c is an Lower case Alphabet",c);
    }
  else if(c>=48 && c<= 57)
    {
       printf("\n %c is an digit",c);
    }
  else
    {
       printf("%c is not alphanumeric",c);
    }
getch();
}
```

2. Write a program to calculate tax , using **else if ladder** if given the following conditions:
   - If income is less than or equal to 1,50,000 then no tax
   - If income is in the range 1,50,001 to 300,000 then charge 10% tax
   - If income is in the range 3,00,001 to 500,000 then charge 20% tax
   - If income is above 500,000 then charge 30% tax

   Answer:

```
#include<stdio.h>
#include<conio.h>
void main()
{
  char c;
  clrscr();
  printf("\nEnter character to be tested:");
  c = getchar();

  if(c>=65 && c<= 90)
    {
      printf("\n %c is an Upper case Alphabet",c);
```

```
    }
  else if(c>=97 && c<= 122)
    {
       printf("\n %c is an Lower case Alphabet",c);
    }
  else if(c>=48 && c<= 57)
    {
       printf("\n %c is an digit",c);
    }
  else
    {
       printf("%c is not alphanumeric",c);
    }
getch();
}
```

3. Write a program to find whether the entered integer number is palindrome number or not using **do…while loop**. A palindrome number is a number that remains same when its digits are reversed. For example 121 will remain 121 even if it is reversed.

   Answer:

```
#include<stdio.h>
#include<conio.h>
void main()
 {
  int num,original,rev;
  int temp;
  clrscr();
  printf("\n Enter a number to check for palindrome:");
  scanf("%d",&num);
  original=num;
rev=0;
do
{
temp=num%10;
rev=rev*10+temp;
num=num/10;
}
while(num>0);
if(rev==original)
printf("\n Entered number is palindrome");
else
printf("\n Entered number is not palindrome");
getch();
}
```

4. Write a program to print the following pattern using **for loop**.

```
        1
      1 2
    1 2 3
  1 2 3 4
1 2 3 4 5
```

Answer:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n,i,j;
clrscr();
printf("\n Enter number of rows you want in pattern:");
scanf("%d",&n);

for(i=1;i<=n;i++)
{
for(j=1;j<=n-i;j++)
{
printf(" ");
}
for(j=1;j<=i;j++)
{
printf("%d",j);
}
printf("\n");
}
getch();
}
```

(b) What is the output of the following code? Assume all the header files. **[04]**

(1)

```
void main()
{
  int a=2 , b=3 , c = 4;
    if(c!=100)
      a=10;
    else
      b=10;
  if(a+b<10)
     c=12;
    a=20;
    b=++c;
  printf("a=%d b=%d",a,b);
  }
```

Answer:

a=20 b=5

1 marks for each output

(2)

```
void main()
{
  int x=4, y=0;
   while(x>=0)
  {
     if(x==y)
        break;
      else
    printf("\n %d %d",x,y);
      x--;
      y++;
  }
}
```

Answer:

4 0

3 1

½ marks for each output

ALL THE BEST