Candidate ID No: _____

# Charotar University of Science and Technology [CHARUSAT]

## Faculty of Technology and Engineering

### U & P U Patel Department of Computer Engineering

## Subject: CE 103 Computer Concepts & Programming

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

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

**Date: 29/09/2014 (Monday)** **Time: 02:20 to 03:20 p.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. Fill in the blanks with appropriate words.** **[02]**

(a) **do..while** loop executes at least once if the condition is false.

(b) **sizeof** is the keyword as well as operator in C.

(c) Character constant is stored in memory using **ASCII** value.

(d) **double a[5]**; declaration occupies **40** bytes of memory.

**2. State whether the following statements are TRUE or FALSE.** **[02]**

(a) A compiler converts object code into source code.

**False**

(b) All the programs implemented in switch…case can be implemented using else...if ladder.

**True**

(c) In C, there is no bound checking for an array. **[02]**

**True**

(d) Explicit type conversion is also an operator in C. **[02]**

**True**

**3. Write equivalent code using if…else.**

```
Z = (sal == 10000) ? ( sal*0.1) : ((sal<10000) ? 9000 : (sal*0.12));
```

**Equivalent Code:**

```
if(sal==10000)
 {
    Z = ( sal * 0.1 ) ;
 }
 else
 {
     if( sal < 10000 )
        {
            Z = 9000 ;
        }
```

```
        else
            {
                Z = sal * 0.12;
            }
    }
```

**4. Classify the variable names in valid or invalid. If invalid specify reason.**

| | | |
|---|---|---|
| (i) (keyword) | (iii) 1One | (v) USB |
| **(i)Invalid – Special characters cannot be used.** | **(iii)Invalid – First letter cannot be digit** | **(v) Valid** |
| (ii) a.b | (iv) 2B | (vi) Char |
| (ii) **Invalid – Special characters cannot be used.** | **(iv)Invalid – First letter cannot be digit** | **(vi) Valid - char is a keyword but C in Char is capital. So it is valid.** |

**[03]**

**(b)** **Attempt the following questions. (Any Three)**

1. Define unary and binary operators.
2. Explain *tolower*( ) and *isupper*( ).
3. Explain Pre-decrement & Post-increment with example.
4. Draw the memory layout for float A[3]. First element address is 2001.
5. Evaluate the expression step by step: 3 + 3 / 3 – 3 % 3 + 3 / 3

**Steps:**

**First Pass:**

Step 1: 3 + 1 – 3 % 3 + 3 / 3

Step 2: 3 + 1 – 0 + 3 / 3

Step 3: 3 + 1 – 0 + 1

**Second Pass:**

Step 4: 4 – 0 + 1

Step 5: 4 + 1

Step 6: 5

**(c)** Explain with diagram the basic structure of C programs. **[04]**

**Q-2 (a) Attempt any Two.** **[10]**

**For Programs Please give marks according to following:**

**1 mark for Declaration**

**1 mark for input statement**

**2 mark for Logic**

**1 mark for output statement**

1. Write a program to reverse the entered integer number.

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int rev=0,num,temp;
 clrscr();
 printf("enter a number:");
 scanf("%d",&num);

 while(num>0)
 {
  temp=num%10;
  rev=rev*10+temp;
  num=num/10;
 }

 printf("\n the reverse number is=%d", rev);
 getch();
}
```

2. Write a program to implement simple calculator (+, - , ×, ÷) using else if ladder.

```
#include<stdio.h>
#include<conio.h>
void main()
{
 char op;
 int a, b;
 clrscr();
 printf("Enter an operator from +,-,*,/ : ");
```

```
    scanf("%c",&op);
    printf("Enter a and b: ");
    scanf("%d %d",&a,&b);
    if(op=='+')
     {
       printf("Addition of two number is %d",a+b);
     }
    else if(op=='-')
     {
       printf("Subtraction of two number is %d",a-b);
     }
    else if(op=='*')
     {
       printf("Multiplication of two number is %d",a*b);
     }
    else if(op=='/')
     {
       printf("Division of two number is %d",a/b);
     }
     else
     {
       printf("Invalid Operator");
     }
   getch();

  }
```

3. Write a program to evaluate the following series:

$$1 - 2 + 3 - 4 + 5 - 6 \ldots \pm n.$$

```
#include<stdio.h>
#include<conio.h>
void main()
{
  int i, n,sum=0;
  clrscr();
  printf("Enter n: ");
  scanf("%d",&n);
  for(i=1;i<=n;i++)
    {
        if(i%2==0)
         {
```

```
        sum = sum - i;
      }
      else
      {
        sum = sum + i;
      }
  }
  printf("Sum of Series is %d",sum);
getch();
}
```

**(b) What is the output of the following code?** **[03]**

(1)
```
void main()
{
  int a[2]={3,2};
  a[0]=a[1]*a[1];
  a[1]=a[0]*a[0];
  printf("%d,%d",a[0],a[1]);
}
```

**Turbo C++ Output: 4,16**

(2)
```
void main()
{
  int p,q,r;
  p=(int)3.25;
  q=p++ + p;
  r=p + q--;
  printf("%d %d %d",p,r,q);
}
```

**Turbo C++ Output: 4 10 5**

(3)
```
void main()
{
    int i=20,j=1,k=5;
    for(;j<5;j++,k--)
    {
        if(i<k)
            break;
        i=i/4;
        printf("%d ",i);
    }
}
```

**Turbo C++ output:5 1**

**(c) Calculate total number of iterations for the given loop.** **[02]**

(1)
```
void main()
{
  int i, j;
  for(i=1, j=4; i<=5, j>0; i=i+2, j--)
    printf("%d %d\n",i, j);
}
```

**No of interations=4**

(2)
```
void main()
{
  int a,b=5,c;
  for(a=1,c=2; b!=2; a++,c--)
    printf("%d ",--b);
}
```

**No of interations=3**

(3)
```
void main()
{
   int i=2, j=4, a[5]={7,2,1,9,5}, k=0;
   while(i<j)
   {
      a[i−1]=j−i+a[i];
      a[j%2]=a[i−1];
      i++;
   }
}
```

**No of interations=2**

(4)
```
void main()
{
   int i=12;
   LOOP:
      if(i<=10)
      {
         i++;
         printf("1");
         i++;
      }
      goto LOOP;
}
```

**No of interations=infinite**

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