Admission No:_____

Computer Engineering Department,S.V.N.I.T. - Surat.
End Semester Examination, Dec., 2019
B Tech I (Div G - K) – 1st Semester
Course : CS 109(Fundamentals of Computer & Programming)

Date: 4th December, 2019 **Time: 08:30 hrs to 11:30 hrs** **Max Marks: 50**

Instructions:
(1) Write your Admission No/Roll No and other required details clearly on your question paper, answer book and supplementary. (2) Assume any necessary data by giving proper justifications. (3) Be precise and clear in answering the questions. (4) Figure to the right indicates full marks of the respective question.

Q.1 **Answer the following(show necessary steps):** [08]
(a) $(10111.011)_2 = (?)_8 = (?)_{10}$
(b) $(9AC3.F3A)_{16} = (?)_8 = (?)_{10}$
(c) $(215)_6 + (14X)_6 = (403)_6$ then X=?
(d) Find $(-43)_{10} + (68)_{10}$ using 2's complement method.

Q.2 **Answer the following(Any FIVE):** [15]
(a) Compare and contrast between symmetric and asymmetric shared memory multiprocessor.
(b) Enlist various types of operating system and explain any one in detail.
(c) Enlist various network topologies and explain any one in detail.
(d) Discuss with diagram: classification of output devices
(e) Explain in brief: advantages and disadvantages of machine language
(f) Give differences between compiler and interpreter.

Q.3 **Draw the flowchart:** To find the largest number among three numbers. [02]

Q.4 **Answer the following(Any TWO)(With respect to C programming language):** [10]
(a) Write a program to find and display the number of prime numbers in an array using user defined function. Here an array with 'N' elements is to be entered through keyboard, where N is less than or equal to size(M) of an array.
(b) Write a program to accept two strings ***s1*** and ***s2*** and display the first position in ***s1*** where any character of ***s2*** occurs. [For example- if ***s1***:*abcdefg*, and ***s2***:*xyahyd*, output:0 (since the character *'a'* of ***s2*** is found in 0th position in ***s1***)]
(c) Write a program to check and display Armstrong numbers between 100 to 999. [For example- if the number is '153', then $1^3+5^3+3^3=153$. Hence 153 is an Armstrong number]

Q.5 **Answer the following(Any THREE)(With respect to C programming language):** [09]
(a) Can we compare two structure variables using = = operator? if not, how do you compare two structure variables?
(b) Differentiate between call by value and call by reference with example.
(c) Differentiate between entry and exit controlled while loops with example.
(d) Differentiate between *break* and *continue* with example.

Q.6 **Find the output for the following(With respect to C programming language):** [06]

(a)
```
void main()
{
int x;
x = 2 > 5 ? 1 != 2 > 5 ? 10 : 20 : 5 < 8 ? 2 != 2 > 5 ? !5 ? 30 : !1 != 1 ? 90 : 40 : 60 : 70;
printf("Value of x:%d", x);
}
```

(b)
```
void main()
{
int t1=1, t2=1;
while(t1<5, t2<10)
{
    t1++;
    ++t2;
}
printf("%d\n%d", t1,t2);
}
```

(c)
```
void main()
{
int A[4]={3,6,9,12}, *p=A;
int x=2;
x++;
printf("%d\n%d\n%d",*A, *(p++), *(p+x));
}
```

Computer Engineering Department, S.V.N.I.T. - Surat.
Mid Semester Examination, Sept.-Oct., 2019
B Tech I (Div G - K) – 1st Semester
Course : CS 109(Fundamentals of Computer & Programming)

Date: 4th October, 2019 **Time: 09:00 hrs to 10:30 hrs** **Max Marks: 30**

Instructions:
(1) Write your Admission No/Roll No and other required details clearly on your question paper, answer book and supplementary.
(2) Assume any necessary data by giving proper justifications.
(3) Be precise and clear in answering the questions.
(4) Figure to the right indicates full marks of the respective question.

Q.1 Answer the following:

1. Discuss in brief : Generations of computers. 02
2. Explain the program development life cycle. 02
3. Draw a flowchart for the following: *for* loop and *while* loop **OR** *do-while* loop and *switch-case* statement. 04
4. Perform the following operations(show necessary conversion steps)(***ANY THREE***): 06
   (a) $(3427)_8 = (?)_2 = (?)_{10} = (?)_5$
   (b) $(11100.10110)_2 + (100100.100)_2 + (1111100.11110)_2 = (?)_{10} = (?)_{16}$
   (c) Using 2's complement: $(111)_{10} + (-69)_{10}$
   (d) $(20X)_7 + (1Y4)_7 = (353)_7$ then X=?, Y=?

Q.2 Answer the following (With respect to C programming language):

1. Explain with example: Bitwise and Logical operators. 03
2. Write an interactive program: 08
   (a) Using an integer array of fixed size(M), generate and display N (<=M) terms of *Fibonacci* series where first two terms of an array are initialized with 1 and 1.
   (b) To print the following pattern(program using explicit *printf* to generate pattern will not be given any credit, whereas general solution will only be considered):

```
    @
   @T@
  @T@T@
 @T@T@T@
```

3. Find the possible output/error(if any) for the following code: (Assume necessary header file) 05

(a)
```
void main()
{
 int x;
 for(x = -1; x <= 10; x++)
 {
  if(x < 5)
   continue;
  else
   break;
  printf("SVNIT");
 }
}
```
How many times "SVNIT" will be printed?

(b)
```
#include<stdio.h>
void main()
{
int z, x=5, y=-10, a=4, b=2;
z= x++ - --y*b/a;
printf("%d", z);
}
```

(c)
```
void main ()
{
 int a, b;
 a = b = 4;
 b = a++;
 printf ("%d %d %d %d",
 a++, --b, ++a, b--);
}
```

(d)
```
void main()
{
 printf("%d",
printf("computer science")
);
}
```

(e)
```
void main() {
 int a = 100, b = 74;
 if (a++ > 100 && b++ > 200)
  printf("High values with
a = %d b = %d", a, b);
 if (a++ < 100 || b++ < 200)
  printf("Low values with
a = %d b = %d", a, b);
}
```