Indian Institute of Technology Mandi
IC150: Computation for Engineers
Tutorial 1

1. Fill in the blanks:

   a) A leading 0 (zero) on an integer constant means _____.
   b) The escape sequence `'\t'` represents _____.
   c) Enumerations provide an alternative to _____.
   d) The _____ operator cannot be applied to a `float` or `double`.

2. Choose the right answer(s)
   (a) The break statement is used to exit from:
   1. an **if** statement
   2. a **for** loop
   3. a program
   4. the **main( )** function

   (b) A do-while loop is useful when we want that the statements within the loop must be executed:
   1. Only once
   2. At least once
   3. More than once
   4. None of the above

3. Which of the following statements is false?
   (1) Each new C instruction has to be written on a separate line
   (2) Usually all C statements are entered in lower case letters
   (3) Blank spaces may be inserted between two words in a C statement
   (4) Blank spaces cannot be inserted within a variable name

4. Do the indicated conversions of C constants:
   (a) 0707 to decimal
   (b) 10100101b to hex and decimal
   (c) 0xfd to octal and binary
   (d) 395 to octal and hex

5. Write the equivalent using `while`:

```
for(i=0; i<10; i++)
{
    do something;
}
```

6. What do these loops print?

```
for(i = 0; i < 10; i = i + 2)
        printf("%d\n", i);

for(i = 100; i >= 0; i = i - 10)
        printf("%d\n", i);

for(i = 2; i < 100; i = i * 2)
        printf("%d\n", i);
```

7. What is the value contained by `pi` after the code is executed?

```
double i;
int pi;
i=3.14159;
pi=i;
```

8. What will be the output of the following?

```
int main()
{
    float a=2, b=1.5, c=12.5 ;
    int s ;
    s = a * b * c / 100 + 32 / 4 - 3 * 1.1 ;
    printf("%d\n", s);
}
```

9. Point out the errors, if any, in the following program:

```
int main( )
{
  float a=12.25, b=12.52;
  if ( a = b )
  printf ("a and b are equal \n" );
{
```

10. If `a = 10, b = 12, c = 0,` find the values of the following expressions:

```
(1) a != 6 && b > 5
(2) a == 9 || b < 3
(3) ! ( a < 10 )
(4) ! ( a > 5 && c )
(5) 5 && c != 8 || !c
```

11. What is the output of:

```
int main( )
{
      int x=4,y,z;
      y = --x;
      z = x--;
      printf("%d%d%d\n", x, y, z);
}
```

12. Print the output of the program below:

```
int main()
{
   int arr[10];
   int i;
   for (i=0;i<10;i++)
         arr[i]=0;
   i=5;
   arr[i]=i++;
   printf("%d %d %d \n", arr[5], i, arr[i]);
}
```

13. What is the output of this program?

```
int main()
{
      int x=1;
      while (x == 1)
      {
      x=x-1;
      printf("%d\n", x);
      }
}
```

14. Print the output of the following program (a) when `index` = 0 and (b) when `index` = 1

```
switch (index)
{
  case 0:
     printf("Customers are dicey\n"); break;
  case 1:
     printf("Markets are pricey\n");
  case 2:
     printf("Investors are moody\n");
  case 3:
     printf("At least employees are good\n");
  default:
     printf("Index is not valid\n");
}
```

15. What is printed by the following C code?

```
i = 0x12a4;
printf("%u, %hu, %hhu\n", i, i, i);
```

16. Write a program to print all the ASCII values and their equivalent characters using a while loop. The ASCII values vary from 0 to 255.
17. Two strings are declared using: `char s1[MAXLEN], s2[MAXLEN];` where `MAXLEN` is a constant. Write C code to copy only the contents of `s1` to `s2`. Assume that `s1` contains a valid C string. Do not use any string functions from `string.h`.