

Indian Institute of Engineering, Science and Technology, Shibpur  
B.Tech-M.Tech Dual Degree (AE/CE/ME/MET/MIN) 1<sup>st</sup> Semester Examination,  
December 2015  
Introduction To Computing (CST - 1201)

Time: 2 hours

Full Marks: 35

(Answer any five)

1. (a) Draw the logic circuit diagram and construct the truth table for the following boolean expression.

$$f(a, b, c) = (a + bc)(ac + b)(c + ab)$$

- (b) Subtract  $N$  from  $M$  using 2's complement method, where  $M$  and  $N$  are unsigned numbers given below.

$$M = (101)_2, N = (1010)_2$$

$$[3 + 4 = 7]$$

2. (a) Write a C function to compute  $x^y$ . Do not use the library function  $\text{pow}()$ .  
(b) Write a C program to compute reverse of a string. Do not use any standard library functions from the header "string.h".

$$[3 + 4 = 7]$$

3. (a) State the differences among different parameter passing mechanisms in C functions using suitable examples.  
(b) Write a C program to compute factorial of a number.

$$[3 + 4 = 7]$$

4. (a) Write a C program to gather temperature throughout a month and print the highest, lowest and average temperature of the month. Also write a C function to find a day of the month when temperature is  $T$  which is an user input.

$$[4 + 3 = 7]$$

5. (a) Write a C program to do the following:
- i. Create a global structure (declare the structure before main) named *book* having members title, author names, name of publishers, number of pages and cost.
  - ii. Develop a function named *modify\_attribute()* that offers user to change attribute in a menu driven way.
  - iii. Develop a function named *insert\_record()* to take records of 10 books.
  - iv. Develop a function to print the name of most expensive books.

$$[1 + 2 + 1 + 3 = 7]$$

6. (a) Write a C program to accept two strings as command line arguments and compute minimum number of bytes required to store the concatenation of these two strings without using the library function *strlen()*.  
(b) Write a C program to print only the vowels from a text file.

$$[3 + 4 = 7]$$