

6/12/18

Indian Institute of Engineering Science and Technology, Shibpur
B.Tech. 1st Semester (AE/CE/ME/MET/MIN) Examinations, 2018
Introduction To Computing (CS - 1201)

Full Marks: 35

Time: 2 Hours

Answer question no. 1 and any three from the rest.
For the programming problems use C language.

1. Answer any seven questions.

- Identify the memory with highest operating speed among the following and write down its function?
RAM, Hard Disk, CPU Register
- What is language translator? Give example of two language translators.
- Point out any two functions of operating system.
- Prove the correctness of the following logic equality: $x'y + xz + yz = x'y + xz$ where x , y , and z are three Boolean variables.
- Draw the logic circuit that emulates XOR gate using NOR gates only.
- Explain the principle of duality in Boolean Algebra with example.
- Find out the logic expression for the borrow and difference of half-subtractor.
- Convert the number $(A19)_{16}$ to octal without any intermediate conversion into decimal.
- What is the basic difference between structure and union?
- "Processing of macro is faster than that of function call" - Justify the statement.

$[(2 \times 7) = 14]$

- Write a program to find the real roots of the quadratic equation $ax^2+bx+c=0$ where the coefficients a , b , and c are to be taken as inputs.
 - Explain the operation of ternary operator using an example.

$[5 + 2 = 7]$

- Write a program to find the odd factors of an input number and store them in an array.
 - How do you dynamically allocate space for 5 integers?

$[5 + 2 = 7]$

- Write a recursive function `long int rpow(int,int)` that will find the value of x raised to the power of y ; where x and y are two positive input-integers. Also show a calling instance of this function from `main()`.
 - Write an user-defined function that can find the length of a string.

$[5 + 2 = 7]$

- Write a program to copy one existing file (source file, say `file1.txt`) into another named file (destination file, say `file2.txt`). In this case take file names as input through command line arguments as follows:

`$./a.out file1.txt file2.txt`

Here the contents of `file1.txt` is to be copied to `file2.txt` and `$` indicates the command prompt.

- Explain the statement `FILE *fp = fopen("INPUT", "w");`.

$[5 + 2 = 7]$

- Define storage class.
 - Distinguish between the followings:
 - Actual and formal arguments
 - Automatic and Static variables
 - Break and Continue statements

$[1 + 6 = 7]$