B Tech

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First Semester (End Sem) Examination 16 Dec ~~Nov~~ 2015

Programming in C (CS101)

Branch : CSE, ETC, EEE & IT

Time 3 Hours

Max Marks : 50

Answer any five questions (Q1 is compulsory.)

[5 * 2]

Q1. Answer all questions.

a. Differentiate between macro and function in c.

b. Write the guidelines to use **printf()** function in C language.

c. Differentiate between auto, static, global and external storage class in C.

d. Syntactically differentiate between function returning pointer and pointer to function.

e. If **arr** is the name of an integer array and **ptr** is an integer pointer pointing to the base address of the array **arr**, clarify the meaning of following notations with respect to 'i' as any index within the bound of array size:

- $i[arr]$
- $*(ptr + i)$

Q2. [5 + 5]

a. What is an operator? Explain the arithmetic, relational, logical and assignment operators in C language.

b. Given the values of the variable x, y and z. write a program to rotate their values such as x has the value of y, y has the value of z and z has the value of x.

Q3. [5 + 5]

a. Explain the two-way selection mechanisms (if, if-else, nested if-else) in C language with proper syntax. Explain the difference between if-else if and switch case with suitable example.

b. Write a C program to reverse an integer number NUM and check whether it is palindrome or not.

[5 + 5]

Q4.

a. What is any array? Explain the declaration and initialization of one and two-dimensional arrays with example.

b. Write a complete C program using function that accepts a sentence and prints the frequency of each of the vowels and total count of consonants.

[5 + 5]

Q5.

a. What is a structure? Syntactically explain array of structures and structure within a structure with examples.

b. Write a C program to read and display the contents of a text file using command line argument. Note that the required file name should be accepted by the main function from the command line.

[5 + 5]

Q6.

a. What is dynamic memory allocation? Write and explain the different dynamic memory allocation functions in C

b. Write a C program to maintain the record of 'n' students using an array of structures with four fields (roll number, name, branch and CGPA). Find a suitable data type for each field. Print the name, branch and CGPA of the student if the roll number of the student is given as the input.

[5 + 5]

Q7. Write short notes:

a. Implicit vs. Explicit type conversion

b. Self-referential structure with its use