First/Second Semester B.E. Degree Examination, Dec.2015/Jan.2016
Programming in 'C' and Data Structures

Time: 3 hrs. 　　　　　　　　　　　　　　　　　　　　　　Max. Marks:100

Note: *Answer FIVE questions, selecting ONE full question from each Part.*

PART – 1

1 　a. Explain the structure of "C" program with example. **(08 Marks)**
　　b. Explain scanf( ) and printf( ) function in 'C' language with syntax and examples. **(08 Marks)**
　　c. Write a 'C' program to find area of a circle. **(04 Marks)**

2 　a. What is an Algorithm? Write an algorithm to find largest of 3 numbers. **(08 Marks)**
　　b. Explain the following operators in 'C' language :
　　　i) Relational 　　ii) Logical 　　iii) Conditional. **(08 Marks)**
　　c. What is an Identifier? Give any 5 rules that are to be followed, while declaring a variable. **(04 Marks)**

PART – 2

3 　a. Explain the ELSE – IF ladder with syntax and example. **(08 Marks)**
　　b. List the types of loops. Explain the working of any one type of loop with syntax and example. **(08 Marks)**
　　c. Write a program to read a year as an input and find whether it is a LEAP YEAR or not. **(04 Marks)**

4 　a. Explain SWITCH statement, with syntax and example. **(08 Marks)**
　　b. Differentiate between WHILE and DO – WHILE loops. **(06 Marks)**
　　c. Write a program to find reverse of a number and check whether it is a PALINDROME or not. **(06 Marks)**

PART – 3

5 　a. What is an ARRAY? Explain the different ways of initializing an array with examples. **(07 Marks)**
　　b. What are the advantages of using User – Defined functions? **(06 Marks)**
　　c. Write a program to read a sentence and print the frequencies of each VOWEL and total count of CONSONANTS. **(07 Marks)**

6 　a. Explain the different types of arrays, with syntax and examples. **(07 Marks)**
　　b. Explain any 4 string manipulating functions with examples. **(08 Marks)**
　　c. Define the following : i) Actual parameter 　ii) Formal parameter 　iii) Global variable 　iv) Local variable. **(05 Marks)**

PART – 4

7 　a. Define a STRUCTURE. Explain structure with syntax and example. **(10 Marks)**
　　b. What is a FILE? Explain any 2 FILE functions, with example.
　　c. Write a program to maintain a record of "n" student details using an array of structures with four fields (Roll number, Name, Marks and Grade). Each field is of an appropriate data type. Print the marks of the student given student name as input. **(10 Marks)**

8   a. Differentiate between STRUCTURES and UNIONS.   (05 Marks)
    b. Explain the various MODES in which a FILE can be created successfully.   (05 Marks)
    c. Given 2 university information files "studentname.txt" and "usn.txt" that contains students Name and USN respectively. Write a program to create a new file called "output.txt" and copy the contents of files "studentname.txt" and "usn.txt" into output file in the sequence shown below :   (10 Marks)

Student Name	USN
Name – 1	USN – 1
Name – 2	USN - 2
.	.
.	.
.	.
.	.

PART – 5

9   a. Define a POINTER. Explain how pointer variable is declared and initialized.   (06 Marks)
    b. What are primitive and non – primitive data types? Give examples.   (06 Marks)
    c. Write a program using pointers to compute sum, mean and standard deviation of all elements stored in an array of "n" real numbers.   (08 Marks)

10 a. Explain any 2 pre – processor directives in 'C' language.   (05 Marks)
    b. What is a STACK? Explain its applications.   (05 Marks)
    c. What is a QUEUE? Explain with example.   (05 Marks)
    d. Write a program to swap 2 numbers using call – by – reference method.   (05 Marks)

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