Printed Pages—4   ECS101

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1601   **Roll No.** [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

B.Tech.

(SEM. I) ODD SEMESTER THEORY
EXAMINATION 2012-13
COMPUTER CONCEPTS AND
PROGRAMMING IN C

Time : 3 Hours   *Total Marks : 100*

Note :– (i)   There are **three** Sections. Section A carries 20 marks, Section B carries 30 marks and Section C carries 50 marks.

(ii)   Attempt **all** questions. Marks are indicated against each question/part.

(iii)   Assume suitable data, wherever necessary.

SECTION–A

1.   You are required to answer **all** the parts of this question :

(2×10=20)

(a)   Differentiate between primary memory and secondary memory.

(b)   Explain the role of control unit of CPU in computer system.

(c)   List any two data type qualifiers and two data type modifiers.

(d)   What do you mean by system software ? Give any two examples of system S/W.

(e) What is the difference between scanf( ) function with %s and gets( ) function used in C language ?

(f) Explain the entry control and exit control looping statements in C with syntax.

(g) Why binary number system is used in digital computer system ?

(h) If $a = 5; b = 6$, then find the value of expression : $++a\&b++$.

(i) Give any two built in mathematical functions in C language with proper syntax.

(j) Differentiate between break and continue statements in C language.

SECTION–B

2. Attempt any **three** parts of the following : (10×3=30)

(a) What do you mean by an algorithm ? Give the major characteristics of an algorithm. Write an algorithm to find the summation of all the integers between 10 and 500 which are divisible by 3 and 5 both. Also draw the flow chart for the same.

(b) Create an array to store the marks of 500 students in a subject. Maximum mark in the subject is 100. Write a program in C language to convert the marks into grades as follows : marks <20 is 'E' grade; 20>=marks <40 is 'D' grade; 40>=marks <60 is 'C' grade; 60>= marks <80 is 'B' grade; 80>= marks <=100 is A grade. Calculate the percentage of marks of each student. Also give the total number of students who have secured 'E' grades.

(c) Convert the following numbers from one base to other :

(i) $(1011.10)_8 = (...)_{10}$

(ii) $(11001011.11)_2 = (...)_8$

(iii) $(1CB1)_{16} = (...)_{10}$

(iv) $(459.25)_{10} = (...)_2$.

(d) Write a program in C to accept a sentence of 9 or more words. Due to some error two or more blank spaces have been entered between the words. The program should also remove the extra blank space between the words and also print the longest word in that sentence.

(e) Write short notes on the following :

   . (i) Step wise refinement

   (ii) Operator precedence and associativity.

SECTION—C

3. Attempt any **two** parts of the following :   (5×2=10)

(a) Make a flow chart for finding maximum number out of any given **three** numbers. Also write algorithm for same.

(b) Write a program in C to display all the prime number between 100 and 1000.

(c) Write a short note on structured programming.

4. Attempt any **two** parts of the following :   (5×2=10)

(a) Write a program to add the two matrixes A [4 × 4] and B [4 × 4] of positive integers. The result should be stored in matrix R.

(b) What is searching ? Explain. Write an algorithm to search a number in a given set of N random number.

(c) Discuss the following :

   (i) Type conversion in C

   (ii) Operating System and its functions.

5. Attempt any **two** parts of the following : (5×2=10)

   (a) Write a short note on the dynamic memory allocation in C. How it is done ? Explain with suitable examples.

   (b) Give an algorithm for push and pop operations on stack. Also write a program in C language to create a stack of even numbers.

   (c) What do you mean by sorting ? Write a program in C to sort the given list of 100 integer numbers in descending order.

6. Attempt any **two** parts of the following : (5×2=10)

   (a) Write a program in C to create an array of integers using pointers. Also give the count of the positive and negative integers in that array.

   (b) Write a program in C to create a text file. Also copy the vowels in that file to another file.

   (c) What do you mean by parameter passing mechanism ? Explain. Write a function to swap the values of two variables.

7. Attempt any **two** parts of the following : (5×2=10)

   (a) Explain the following : (i) Macros (ii) Conditional compilation.

   (b) Write a short note on the various storage classes in C language.

   (c) Write a program to create a suitable structure of the 500 employees in an organization regarding their personnel information [Make suitable assumptions but at least four attributes should be in the structure]. Also list the employees belonging to a particular state.