Code: CS11   Subject: COMP. PROG. & PROBLEM SOLVING THROUGH C

ALCCS – OLD SCHEME

Time: 3 Hours   **AUGUST 2012**   **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE:
- **Question 1 is compulsory and carries 28 marks. Answer any FOUR questions from the rest. Marks are indicated against each question.**
- **Parts of a question should be answered at the same place.**

Q.1   a. Explain the difference between program testing and debugging.

b. Write a program to swap two numbers using pointers.

c. What is an unsigned integer constant? What is the significance of declaring a constant as unsigned?

d. Are the following two statements identical?
   char str[6] = "Kicit" ;
   char *str = "Kicit" ;

e. What will be the output of the following code segment, if any?

```
myfunc (struct test t) {
        strcpy(t.s, "world");
}

main() {
        struct test { char s[10]; } t;
        strcpy(t.s, "Hello");
        printf("%s", t.s);
        myfunc(t);
        printf("%s", t.s);
}
```

f. Develop your own function to compare two strings of same size.

g. What is the use of randomize( ) and srand( ) function?   **(7×4)**

Q.2   a. Write a C program to input N numbers (integer or real) and stores them in an array. Conduct a linear search for a given key number and report success or failure in the form of a suitable message.   **(6)**

b. Write a C program to delete duplicates from an array of integers. **(8)**

c. Write a C program to calculate X^Y using recursion where values of X and Y are entered through keyboard. Don't use pow() function. **(4)**

Q.3 a. Write a C program that counts the number of characters and lines in a program. Lines are designated by a new line. Also note that the program guards against a file that ends without a newline for the last line. **(9)**

b. Write a C program that reads values from keyboard into a two-dimensional array. Create two one-dimensional arrays that contains row and column averages. **(9)**

Q.4 a. A C program contains the following declaration.
static int x[8] = { 10, 20, 30, 40, 50, 60, 70, 80};
(i) What is the meaning of x
(ii) What is the meaning of (x + 2)
(iii) What is the value of *x
(iv) What is the value of (*x + 2)
(v) What is the value of *(x + 2) **(5×2)**

b. Using multidimensional array, write a program in C to sort a list of names in alphabetical order. **(8)**

Q.5 a. Write an appropriate declaration for each of the following situations involving pointers.
(i) Declare a function that accepts an argument which is a pointer to an integer quantity and returns a pointer to a six-element character array.
(ii) Declare a function that accepts an argument which is an integer array and returns a pointer to a character.
(iii) Declare a function that accepts an argument which is a pointer to an integer array and returns a pointer to a character.
(iv) Declare a pointer to a function that accepts an argument which is a pointer to an integer array and returns a character.
(v) Declare a pointer to a function that accepts an argument which is an array of pointers to integer quantities and returns a pointer to a character. **(5×2)**

b. Write a function that accepts two strings str1 and str2 as arguments and find which of the two is alphabetically greater (without using the library functions). The function should return 1 if str1 is greater than str2, 0 if str1 is equal to str2, and -1 if str1 is smaller than str2. **(8)**

Q.6 a. Explain the different types of memory allocations in C. **(8)**

b. Write a complete C program for reading an employee's file containing {emp_number, name, salary, address}. Create an output file containing the names of those employees along with their salary and address whose salary is > 15,000. **(10)**

Q.7   a. Predict the output or error(s) for the following. (Support your answer with proper explanation).

(i)   ```
main() {
int c[ ]={2.8,3.4,4,6.7,5};
int j,*p=c,*q=c;
for(j=0;j<5;j++) {
printf(" %d ",*c);
++q;
}
for(j=0;j<5;j++){
printf(" %d ",*p);
++p;
}
}
```

(ii)    ```
main() {
main();
}
```

(iii)   ```
enum colors {BLACK,BLUE,GREEN}
main() {
printf("%d..%d..%d",BLACK,BLUE,GREEN);
return(1);
}
```

(iv)    ```
#define square(x) x*x
main() {
int i;
i = 64/square(4);
printf("%d",i);
}
```
                                                                    (4×3)

b. Write a C function for Sorting and Reversing a linked list.   **(6)**