Code: AC05 / AT05 **Subject: PROGRAMMING & PROBL SOLVING THROUGH 'C**

Time: 3 Hours **JUNE 2011** **Max. Marks: 100**

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: **(2×10)**

a. A programme written in C language contains

(A) Any number of main() function
(B) Only one main() function
(C) No main function
(D) One main() and at least one other function

b. for(;;) statement

(A) is a valid statement **(B)** implements infinite loop
(C) Both **(A)** and **(B)** **(D)** **(B)** only.

c. Which of the following C language input function does echo back the inputted character on the screen?

(A) getch() **(B)** getche()
(C) getchar() **(D)** fgetc()

d. On a 64 bit machine, we compile a C program using 32 bit compiler. What is the size of an **int** type variable define, in the program?

(A) 64 bit **(B)** 16 bit
(C) 32 bit **(D)** 128

e. After the execution of "x = y = z = 6", what will be the value of x, y and z?

(A) x = 6, y = 6, z = 6 **(B)** It is compiler dependent
(C) x = y, y = z, z = 6 **(D)** None of these

f. Similarity between "continue & break" statements is

(A) Both are same
(B) Both leave the statements below it without execution within the loop.
(C) Break allows the execution of the statement below it
(D) Continue allows but break does not allow execution of statement below it.

g. Consider the variables: int A[10], x, *y, **z; Which of the following is valid statement?

(A) x = A
(B) y = &A
(C) y = A
(D) A = y

h. An OS automatically opens three files, whenever a C program is executed. Which are these three files and how are they referenced?

(A) stdin, stdout and stderr
(B) stdio, stderr and stdfile
(C) stdmon, stdkb and stderrfile
(D) stdin, stdio and stdioe

i. Which of the following is true about the 'include' keyword in C language?

(A) It is a Compiler directive
(B) It must begin with symbol #
(C) I can be written only at the beginning of the program.
(D) **(A)** and **(B)** only

j. Documentation of code is essentially required to

(A) Enhance readability of code
(B) To make any modification and upgrade of code easy
(C) To provide an interface in future
(D) All of the above

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Write a program to convert a string of digits into corresponding number e.g. string "12345" should be converted into a number 12345. **(8)**

b. Define a structure containing the following information: name, employeecode, age, qualification (last only) and date of joining. You can assume appropriate data type for each of the field. Then write a program to append records in a file called "employee.txt". **(8)**

Q.3 a. Write an algorithm to determine whether a given integer is prime. **(8)**

b. Differentiate between big oh (O) and small oh (o) notation. **(8)**

Q.4 a. Write a short note on stepwise refinement. **(5)**

b. Explain the difference between a compiler and an interpreter. **(5)**

c. Write a program to add two matrices of dimension 3×4 and store the result in another matrix. **(6)**

Q.5 a. Write a function strcmp() that takes two strings as arguments and compa... for equality or inequality.

b. What is Abstract data type and Derived data type? **(5)**

c. Give the meaning of the following format specifies:
%f %g %o %u %ld %14.5f **(3)**

Q.6 Write a complete program to create a singly linked list. Also write functions to
(i) display the list.
(ii) count the number of nodes.
(iii) add a new node at the end of list.
(iv) reverse the list. **(16)**

Q.7 a. What is the advantage of linked list over array? Give an example in which static data allocation is better than dynamic allocation. **(8)**

b. Give syntax of fread () and fwrite () functions and explain the meaning of each parameters. **(8)**

Q.8 a. Briefly explain various program design approaches. **(6)**

b. Write a C program to concatenate string2 to string1 and result remains in string1. **(10)**

Q.9 a. Give the output of the following program

```
main()
{
int y = 0;
unsigned int x = 0;
while (x != 0) { x <<1; y++ }
printf("the value of y is "%d", y);
}
```
(3)

b. Write a short notes on the followings:

(i) Basic path testing and
(ii) Black box testing. **(8)**

c. Write a macro to compute the cube of a number. **(5)**