NEW SCHEME

MCA14

USN

First Semester M.C.A Degree Examination, July/August 2003

Master of Computer Applications
(New Scheme)
Programming Concepts & C Language

Time: 3 hrs.]

[Max.Marks : 100

Note: *1. Answer any FIVE full questions without leaving any part.*

Part A

1. (a) With a neat block diagram, explain different blocks of a digital computer.
    (8 Marks)

    (b) What is the need for secondary storage? Briefly describe any one secondary storage device.
    (6 Marks)

    (c) Write a note on plotter.
    (6 Marks)

2. (a) Differentiate between application software and system software.
    (6 Marks)

    (b) Define i) Compiler   ii) Interpreter
        Give examples for each.
    (6 Marks)

    (c) What is an operating system? Explain any five basic DOS commands.
    (8 Marks)

Part - B

3. (a) Define flow chart. Draw a flow chart to find the sum of natural numbers up to N.
    (8 Marks)

    (b) What is a variable? How are the variables declared in C?
    (6 Marks)

    (c) Explain basic structure of a C program.
    (6 Marks)

4. (a) Explain bitwise logical operators available in C. Discuss the order of evaluation.
    (6 Marks)

    (b) Explain with example scan f ( ) and print f ( ) functions in C.
    (6 Marks)

    (c) Discuss the various 'if structures available in C.
    (8 Marks)

5. (a) Explain the different control loop structures that are available in C language.
    (10 Marks)

    (b) Write a C program to accept an integer number and print the digits using words (eg. 123 is printed as one two three).
    (10 Marks)

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6. (a) Explain how looping structures are used to read/write one, and two dimensional arrays. (7 Marks)

(b) Write a C program to reverse the given integer (Eg. n= 123 then reverse number = 321). (6 Marks)

(c) Write a C program to find the product of two matrices. (7 Marks)

7. (a) Explain any four string handling functions in C. (6 Marks)

(b) Write a C program to count number of vowels in a given string. (8 Marks)

(c) Distinguish between local and global variables in C. (6 Marks)

8. (a) What is a structure? How is it different form union. Explain with example. (6 Marks)

(b) What is a pointer? How do you access a variable through a pointer. (6 Marks)

(c) Write a C program to find the biggest of two given numbers using pointers. (8 Marks)

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MCA14

Reg. No.

First Semester M.C.A Degree Examination, January/February 2003

Master of Computer Applications
(New Scheme)
Programming Concepts & C Language

[Max.Marks : 100

Time: 3 hrs.]

Note: *1. Answer any FIVE full questions without leaving any part.*

Part A

1. (a) Explain with a neat figure the block diagram of a computer. **(10 Marks)**

   (b) Write a note on common input devices. **(8 Marks)**

   (c) Why are Modems needed for data communication? **(2 Marks)**

2. (a) What are the features of main memory? What are the different types of main memory? Explain. **(8 Marks)**

   (b) How are computer networks classified? **(6 Marks)**

   (c) What are the major functions of operating system? List the major types of operating system. **(6 Marks)**

Part - B

3. (a) Write the different symbols used in flow chart. **(4 Marks)**

   (b) Write a flow-chart to determine the smallest of three numbers. **(6 Marks)**

   (c) Explain the basic structure of 'C' program. **(10 Marks)**

4. (a) Explain the various data types in 'C'. **(8 Marks)**

   (b) List four storage classes available in C and indicate their function. **(4 Marks)**

   (c) Write a C program that reads in a lower-case character and converts it to a upper case and displays it, using library functions. **(6 Marks)**

   (d) What are preprocessor directives in C? **(2 Marks)**

5. (a) A, C program contains the following declaration

   ```
   int i, j ;
   char c ;
   float x ;
   short S;
   ```

   Determine the data type of each of the following :

   i) i + c   ii) x + c   iii) i + x   iv) s + j **(4 Marks)**

   (b) Explain the various decision making statements in C. **(8 Marks)**

   (c) Write the syntax for the conditional operator in C. **(2 Marks)**

   (d) Use a WHILE statement to calculate the average of a list of n numbers. (The user need to enter the value n) **(6 Marks)**

6. (a) How do you declare and initialize one dimensional and two dimensional array?
(4 Marks)

(b) Give any four commonly used string handling functions in C and explain their functions.
(8 Marks)

(c) Write a program to read a line of text from keyboard and display it on the screen.
(8 Marks)

7. (a) Write the structure of user defined function in C.
(4 Marks)

(b) What are the different category of functions? Explain.
(6 Marks)

(c) Explain the term :
   i) Automatic variable ii) Global variable.
(4 Marks)

(d) Define a structure containing two floating point numbers called real and imaginary. Include the tag complex. Declare the variables x_1, x_2, x_3 to be of structure type complex.
(6 Marks)

8. (a) How are pointers declared and initiated in C?
(2 Marks)

(b) Write a program using pointers to compute the sum of all elements stored in an array (one-dimensionsal)
(8 Marks)

(c) List any four file handling functions in C and explain how they are declared.
(4 Marks)

(d) How is union declared in C? Differentiate between structures and union.
(6 Marks)

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MCA14

NEW SCHEME

First Semester M.C.A Degree Examination, January/February 2004

Master of Computer Applications
Programming Concepts & C Language

[Max.Marks : 100

Time: 3 hrs.]

Note: *1. Answer any FIVE full questions without leaving any part.*

PART A

1. (a) What do you mean by stored program concept? Discuss. **(4 Marks)**

   (b) Explain why one cannot use a computer readily without using a language such as FORTRAN, C etc. **(4 Marks)**

   (c) Mention at least three input and output devices. Write a note on any one of the very popularly used output devices. **(6 Marks)**

   (d) Why secondary storage is required? Hence or otherwise write a note on the floppy drive. **(6 Marks)**

2. (a) What are i) Editors ii) Compilers iii) Assemblers and iv) Interpreters? **(8 Marks)**

   (b) What is an operating system? Give a list of the functions performed by an operating system. **(6 Marks)**

   (c) Mention any two DOS commands and their equivalent UNIX commands. What for these commands are used? Discuss. **(6 Marks)**

PART B

3. (a) What for algorithms and/or flow charts are used? Write an algorithm as well as flowchart to compute the sum of first 50 odd natural numbers. Which one i.e the algorithm or flowchart, do you prefer to use? And why? **(10 Marks)**

   (b) Give a list of C-constants with at-least two different examples for each. **(6 Marks)**

   (c) Name C-basic data types and give their size or range of values. **(4 Marks)**

4. (a) What are short hand assignment operators and multiple assignment statements? Discuss. **(5 Marks)**

   (b) Name and explain the C function that is used to get input to a program. **(5 Marks)**

   (c) Mention any two preprocessor directives and explain. **(5 Marks)**

   (d) Given the sides of a triangle write a program to compute the area of the triangle and print. **(5 Marks)**

5. (a) Mention all the loop control structures that the C has and explain any one of these clearly. (6 Marks)

   (b) With the aid of a flowchart or an algorithm write a complete C program to compute the sum of all the digits of a given integer. (10 Marks)

   (c) Write a complete program to read in an integer number, findout whether it is an odd number or even number and to report accordingly. (4 Marks)

6. (a) What is an array? Discuss how an array is declared and its elements are discussed. (5 Marks)

   (b) Write a program to compute the transpose of a given matrix. (5 Marks)

   (c) Discuss how a function in C is defined and used in a main function. Hence or otherwise discuss how parameters are passed on to a user defined function from the main ( ) and how the computed result sent back to the main ( ). (10 Marks)

7. (a) Mention at least four string handling functions and explain the behaviour of the functions that are used for

   i) joining two strings and

   ii) for comparing two strings. (8 Marks)

   (b) Write a complete C program to read n names and to sort them alphabetically. (6 Marks)

   (c) Discuss how a file is defined, opened and closed in C. (6 Marks)

8. (a) Develop a function to Swap the contents of two variables using pointers. Hence or otherwise discuss the meaning of a pointer. (8 Marks)

   (b) What is a command line argument? Mention the arguments associated with the main ( ) function using which command line arguments are handled. (5 Marks)

   (c) Write a program that receives a filename and a line of text as command line arguments and write the text to the file. (7 Marks)

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First Semester M.C.A Degree Examination, July/August 2004
Master of Computer Applications
Programming Concepts & C Programming

[Max.Marks : 100

Time: 3 hrs.]

Note: *Answer any FIVE full questions without leaving any part.*

PART - A

1. (a) With a suitable diagram, explain the functional units of a digital computer.
(8 Marks)

(b) Differentiate between primary & secondary memory. Explain floppy disk in detail.
(8 Marks)

(c) With suitable examples, differentiate between system software & application software.
(4 Marks)

2. (a) Define :
    i) Operating system   ii) Editor   iii) Assembler
(6 Marks)

(b) Define computer network. Give its advantages. Explain LAN and WAN in detail.
(9 Marks)

(c) Explain any three internal commands & two external commands of DOS.
(5 Marks)

PART - B

3. (a) Write an algorithm to find roots of quadratic equation.
(6 Marks)

(b) Explain C tokens.
(10 Marks)

(c) Explain increment & decrement operators with suitable examples.
(4 Marks)

4. (a) Explain printf (·) function with suitable examples.
(6 Marks)

(b) Discuss any three control structures with examples.
(9 Marks)

(c) Explain :
    i) Conditional operator
    ii) Logical operators.
(5 Marks)

5. (a) Explain the three category of functions in detail.
(6 Marks)

(b) Write a program to generate n terms of fibonacei series using recursion.
(9 Marks)

(c) With suitable examples explain symbolic constant.
(5 Marks)

6. (a) Explain :

    i) strcat ( )   ii) strcmp ( )

    iii) strcpy ( )   iv) strlen ( )

(8 Marks)

(b) Write a program to find the smallest element in an array of n elements using pointers.

(12 Marks)

7. (a) Explain :

    i)   Static variables

    ii)   Automatic variables

    iii)   External variables

    iv)   Register variables

(8 Marks)

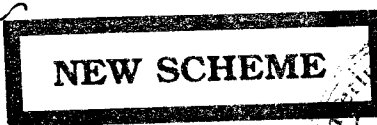(b) Write a program to find trace of a matrix.

(8 Marks)

(c) What is type casting? Explain with examples.

(4 Marks)

8. (a) Discuss (i) Structure ii) Union. Give the difference between them. (10 Marks)

(b) Write a program to create & count number of characters in a file. (10 Marks)

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NEW SCHEME

MCA14

USN ☐☐☐☐☐☐☐☐☐☐

First Semester M.C.A Degree Examination, January/February 2005
Master of Computer Applications
Programming Concepts & C Language

Time: 3 hrs.]

[Max.Marks : 100

Note: *1. Answer any FIVE full questions without leaving any part. 2. All questions carry equal marks.*

PART - I

1. (a) Explain the stored program concept of a digital computer. **(4 Marks)**

   (b) Mention the different kinds of printers along with the main features of each type. **(6 Marks)**

   (c) What is the necessity of secondary storage? With a neat diagram, explain the working of a hard disk storage device. **(10 Marks)**

2. (a) Distinguish between machine level and higher level languages. Discuss their advantages and disadvantages. **(8 Marks)**

   (b) What is an operating system? List/mention the different functions of operating systems. **(4 Marks)**

   (c) What is the need of computer networks? Explain the different basic topologies of computer networks. **(8 Marks)**

PART - II

3. (a) What is a flow chart? Write a flow chart to find all prime numbers from n to m, where n and m are input at run time and $n \leq m$. **(6 Marks)**

   (b) What is an identifier? List the rules required to form variable names. **(6 Marks)**

   (c) Write an explanatory note on the fundamental data types available in C language. **(8 Marks)**

4. (a) With the general syntax, explain the scanf function along with format specifiers. **(6 Marks)**

   (b) Write the output of the following program :

```
# included <studio.h >
main ( )
{
    int x = 5, m, k = 1, n;
    float y = 2.5 ;
    m = x * 1000 + y * 10 ;
    k = m / 1000 + x ;
    n = (x == y)? k : m ;
    printf("%d\ n%d\ n%d", m, k, n) ;
}
```
(6 Marks)

   (c) List the different logical and bitwise operators in C language and give atleast one example for any one operator in each group. **(8 Marks)**

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5. (a) With general syntax, explain the use of switch statement, with an example.
   (6 Marks)

   (b) Write a program to find the value of y using nested if statement, where

   $$y(X, n) = \begin{cases} 1 + X & when & n = 1 \\ 1 + X/n & when & n = 2 \\ 1 + X^n & when & n = 3 \\ 1 + nX & when & n > 3 \ or \ n < 1 \end{cases}$$

   (8 Marks)

   (c) Explain the use of break and continue statement in loop control structures.
   (6 Marks)

6. (a) Along with general syntax, explain the do-while loop statement of C. **(4 Marks)**

   (b) Write a program to evaluate the given series upto N terms, where i is an integer.

   $$\frac{1}{(i+1)!} + \frac{1}{(i+2)!} + - - - - - \frac{1}{(i+n)!}$$

   (8 Marks)

   (c) Write a program to find the sum of upper diagonal and lower diagonal elements of a given square matrix.
   (8 Marks)

7. (a) Explain the different ways of passing parameters to functions with an example.
   (6 Marks)

   (b) Write a program to generate Fibonacii series using iteration. Use function to generate the series.
   (8 Marks)

   (c) What is the difference between a string constant and a character constant? Explain the use of gets and puts functions.
   (6 Marks)

8. (a) Discuss how structures are declared, initialized and its members accessed.
   (6 Marks)

   (b) What is a pointer variable? Write a program to find the sum of N elements of an array, using pointers.
   (8 Marks)

   (c) Explain how files are handled in C, illustrating opening and closing of files with an example program.
   (6 Marks)

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MCA14
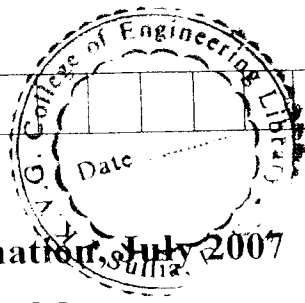
NEW SCHEME

First Semester MCA Degree Examination, July 2007

Programming Concept and 'C' Language

Time: 3 hrs.]

[Max. Marks:100

Note : *Answer any FIVE full questions, choosing at least ONE question from each part.*

PART - A

1 a. Draw the functional block diagram of a digital computer. Name each block clearly. Briefly explain each of these blocks. **(08 Marks)**
   b. Clearly distinguish between machine language, higher level language and assembly level language. **(06 Marks)**
   c. Why secondary storage is required? Hence or otherwise, write a note on the floppy drive. **(06 Marks)**

2 a. What is an operating system? Mention and discuss various functions performed by it. Mention the names of the operating systems that you know. **(08 Marks)**
   b. Draw a flow chart to compute the sum of the squares of integers from 1 to N. **(06 Marks)**
   c. How are computer networks classified? **(06 Marks)**

PART - B

3 a. Explain C tokens. **(07 Marks)**
   b. Explain increment and decrement operators with example. **(07 Marks)**
   c. Explain the type modifiers. **(06 Marks)**

4 a. Discuss any three control structures with examples. **(09 Marks)**
   b. Explain with example scan f ( ) and print f ( ) functions in 'C'. **(06 Marks)**
   c. Write a program to find the roots of quadratic equation. **(05 Marks)**

5 a. What are arrays? Explain with example. **(05 Marks)**
   b. Explain with examples the various string manipulation functions in 'C'. **(05 Marks)**
   c. Write a program to compute the transpose of a given matrix. **(10 Marks)**

6 a. What is a structure? Explain with example. **(06 Marks)**
   b. What are functions? How are functions defined? Discuss on the types of values returned from a called function as well as parameter passing techniques. **(08 Marks)**
   c. Write a function to accept a number and display its factorial using recursive function. **(06 Marks)**

7 a. What are pointers? How do you access values using pointers? Explain with example. **(06 Marks)**
   b. Explain how to use pointers to arrays with example. **(06 Marks)**
   c. Write a program to swap the contents of two variables, say x and y using pointers. **(08 Marks)**

8 a. Explain command line arguments with example. **(06 Marks)**
   b. What is a 'C' preprocessor? Mention different preprocessor directives. Explain. **(08 Marks)**
   c. Write a program that receives a file name and a line of text as command line arguments and write the text to the file. **(06 Marks)**
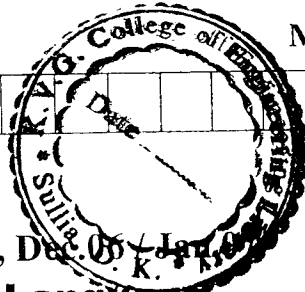
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USN

MCA14

NEW SCHEME

First Semester MCA Degree Examination, Dec.05/Jan.06

Programming Concepts and C Language

Time: 3 hrs.] [Max. Marks:100

Note: *1. Answer any FIVE full questions without leaving any part.*

Part A

1 a. Explain with a neat figure the block diagram of a computer. (08 Marks)
   b. What are the different kind of memory used in computers? Explain with examples. (06 Marks)
   c. Describe the components and working of a laser printer. (06 Marks)

2 a. What are i) Editors ii) Assembler iii) Compilers iv) Interpreters. (08 Marks)
   b. Explain any three salient features of UNIX operating system. (06 Marks)
   c. What is e-mail? Explain its feature in details. (06 Marks)

Part B

3 a. What is an algorithm? Write an algorithm to find reverse of a given number. (06 Marks)
   b. Write a flowchart to find roots of a quadratic equation. (06 Marks)
   c. Explain the basic data types supported by C language with examples. (08 Marks)

4 a. Explain the different relational operators in C with examples. (05 Marks)
   b. Explain Scanf( ) and Printf ( ) with examples. (05 Marks)
   c. How are control statements classified in C? Explain each one with general syntex. (10 Marks)

5 a. Explain any two preprocessor directives and explain. (06 Marks)
   b. Write a complete C program to compute the sum of all the digits of a given integer. (06 Marks)
   c. Write a complete program to read in an integer number. Find out whether it is an odd number or even number and to report accordingly. (04 Marks)
   d. Explain the use of break and continue statements in a loop. (04 Marks)

6 a. How do you declare and initialize arrays in C? Explain with general syntax. (06 Marks)
   b. Write a C program to read N integers (N<=100), find the average of there and print the average along with given N numbers. (06 Marks)
   c. Write a C program to read a matrix A (m × n) and find the following using functions:
      i) Sum of elements of each of m rows.
      ii) Sum of elements of each of n columns. (08 Marks)

7 a. Explain any four string handling functions in C with appropriate examples. (10 Marks)
   b. Write a C program using bubble sort to sort a list of names in alphabetic order. (10 Marks)

8 a. What is a structure? Explain with example structure with in a structure. (05 Marks)
   b. What is a pointer? How do you declare a pointer variable. Explain. (05 Marks)
   c. Write a program using pointers to swap two numbers. (05 Marks)
   d. What is an UNION? How are they declared? Explain. (05 Marks)

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07MCA14

USN

First Semester MCA Degree Examination, June / July 08
Problem Solving Using C

Time: 3 hrs.
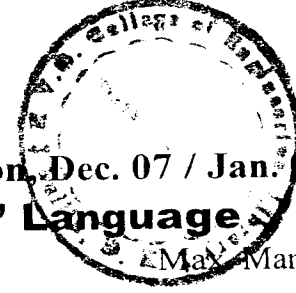
Max. Marks:100

Note : *Answer any FIVE full questions.*

1 a. What is an algorithm? Give and explain the characteristics of an algorithm. **(06 Marks)**
   b. Give a precise algorithm to find the GCD (Greatest Common Divisor) of two numbers. Hand simulate the algorithm for the numbers 27 and 18. **(06 Marks)**
   c. What are the simple data types supported by C programming language? Give and explain the syntax of declaring the variables of these types, using examples. **(08 Marks)**

2 a. What are bitwise operators? Explain the bitwise operators supported by C language using examples. **(06 Marks)**
   b. Write a C program to find the roots of the equation $ax^2 + bx + c = 0$, your program should read the values of a, b and c from the keyboard. **(08 Marks)**
   c. Give the precedence of arithmetic operators in C language. Give the valid 'C' expressions for the following arithmetic expressions, also indicate the steps of computation for x = 5, y = 10. i) $x^3 + 3x^2 + 4y - 10$ ii) $x^2y^2 + x^3y + 4xy + 20$. **(06 Marks)**

3 a. Briefly describe the syntax of printf and scanf functions using examples. **(04 Marks)**
   b. Write a 'C' program to input a number from 0-9 and display the number in words using if / if-else statements (Eg: $4 \rightarrow$ Four). **(08 Marks)**
   c. Write a 'C' program to find the least amongst three numbers using ternary operators only. **(08 Marks)**

4 a. Explain the looping structures supported by C programming language. Differentiate the looping structures using flowcharts. **(06 Marks)**
   b. Describe the continue, break and exit statements using examples. **(06 Marks)**
   c. Write C program to find the sum of even numbers and sum of odd numbers separately from amongst the natural numbers from 1 to n. The program should read the value of n from the keyboard. **(08 Marks)**

5 a. What is an array? Explain the syntax of declaring the two dimensional array. **(04 Marks)**
   b. Write a 'C' program to read a m × n two dimensional array and exchange the elements of the first and last row. **(08 Marks)**
   c. Write a C program to sort N numbers using a bubble sort technique. **(08 Marks)**

6 a. What is a character array? With examples explain how to input strings from keyboard. **(05 Marks)**
   b. Write a C program to input a string and print its reverse without using library functions. **(08 Marks)**
   c. What is a user-defined function? Write a C program using functions to evaluate the expression $3x^2 + Sinx$. The value of x is to be passed to the function. (Library function can be used to compute Sinx). **(07 Marks)**

7 a. What is a structure? Give the syntax for defining a C structure. Also explain how the individual members of the structure are accessed. **(06 Marks)**
   b. What is a pointer? With the help of a diagram explain how to access a variable through its pointer. **(06 Marks)**
   c. Write a C program to create a copy of a text file. **(08 Marks)**

8 Briefly explain the following:
   a. Dynamic memory allocation   b. Preprocessor directives
   c. Pointers and arrays   d. Unions. **(20 Marks)**

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MCA14

First Semester MCA Degree Examination, Dec. 07 / Jan. 08
Programming Concepts and 'C' Language

Time: 3 hrs.   Max. Marks:100

Note : *Answer any FIVE full questions.*

1 a. Explain the block diagram representation of a digital computer with a neat diagram.
                                                                                (10 Marks)
   b. Write a note on primary memory.   (05 Marks)
   c. Explain the classifications of computer languages.   (05 Marks)

2 a. Differentiate between system software and application software. Give examples. (06 Marks)
   b. Mention the specific features of DOS, UNIX and WINDOWS operating systems.
                                                                                (06 Marks)
   c. What is computer network? Differentiate between LAN and WAN.   (08 Marks)

3 a. Define algorithm, program. Mention their differences.   (05 Marks)
   b. Write a flowchart to solve a quadratic equation.   (05 Marks)
   c. Mention the various types of operators that are supported by 'C'.   (10 Marks)

4 a. What do you mean by looping? Explain each of them with neat syntax and flowchart with
      supporting 'C' statements.   (10 Marks)
   b. Write a 'C' program to find the GCD of two positive integers.   (05 Marks)
   c. Differentiate between break and continue statements in 'C'. Illustrate with a program
      segments.   (05 Marks)

5 a. What is an array? How are one and two dimensional arrays are declared and initialized?
      Give example.   (08 Marks)
   b. Write a 'C' program using arrays to find the sum and average of N integer numbers.
                                                                                (05 Marks)
   c. What is the difference between built-in and user defined functions? Mention the various
      types of user-defined functions supported by 'C'.   (07 Marks)

   a. What are strings? Explain any four-string operations with string handling functions.
                                                                                (08 Marks)
   b. Write a 'C' program to concatenate two strings without using built-in functions. (05 Marks)
   c. Write a 'C' program to check whether a given string is palindrome or not. (07 Marks)

7 a. Write a 'C' program to demonstrate arrays of structures.   (08 Marks)
   b. What is a pointer? How do you declare pointer variable? Write a program to show call-by-
      reference function.   (08 Marks)
   c. Differentiate between structure and union. Write their general format.   (04 Marks)

8 a. Write a 'C' program to find the sum of N elements stored in an array using pointers.
                                                                                 (06 Marks)
   b. Write a 'C' program to create a file of characters, read and display them on the screen.
                                                                                 (06 Marks)
   c. Write a 'C' program to find the sum of two compatible matrices. use functions to accept
      matrices, display matrix and to find their sum.   (08 Marks)

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USN ☐☐☐☐☐☐☐☐☐☐   07MCA14

First Semester MCA Degree Examination, Dec 08 / Jan 09
Problem Solving Using C

Time: 3 hrs.   Max. Marks:100

Note : *Answer any FIVE full questions.*

1 a. Give the distinct definitions of an algorithm. Give an example.   **(06 Marks)**
   b. What are the advantages of drawing a flow chart?   **(04 Marks)**
   c. Write a flow chart for finding roots of a quadratic equation of the form $ax^2 + bx + c$.
                                                                                (10 Marks)

2 a. Give the general format of a C – Program.   **(05 Marks)**
   b. What do you mean by overflow and underflow of data? Give example in each case.
                                                                                (06 Marks)
   c. Write equivalent C – statements for the mathematical identities given below.

   i) $y = \dfrac{(\sin\alpha + \tan\theta)}{\sqrt[3]{\beta^2 - x^3}}$ ii) $\sigma = \left(\dfrac{1+\sin\phi}{1-\sin\phi}\right)\lambda$.   **(04 Marks)**

   d. Write a program to find biggest among three numbers using ternary operator.   **(05 Marks)**

3 a. Write a program to sum the series.
      Sum = $1 + (1 + 2) + (1 + 2 + 3) + \ldots\ldots + (1 + 2 + 3 + \ldots n)$.   **(07 Marks)**
   b. Write a program to find number of primes between integers m and n (m < n). Also print the prime numbers.   **(08 Marks)**
   c. Write down the differences between for loop, while loop and do… while loop and indicate the situations they are best suited.   **(05 Marks)**

4 a. What are arrays? When are they used? How an array is initialized and declared? Give an example.   **(06 Marks)**
   b. Read a matrices A (m × n) and B (p × q). Verify whether they are multiplicable. If multiplicable, find the resultant matrix C. Verify if the trace exists in C, if so, find the trace.   **(12 Marks)**
   c. Mention storage class specifiers.   **(02 Marks)**

5 a. Explain any five string functions in C. Give syntax of each and brief on how each of them work.   **(10 Marks)**
   b. Write a program to check whether a given string is a palindrome or not (without using any built - in string function).   **(06 Marks)**
   c. Implement streat ( ) function without using any built - in functions.   **(04 Marks)**

6 a. What are functions? What are the advantages of functions?   **(05 Marks)**
   b. Implement bubble sort algorithm using a function.   **(10 Marks)**
   c. Write a recursive function to add two numbers a and b.   **(05 Marks)**

7 a. What are the differences between a structure and a union?   **(04 Marks)**
   b. Write a program to create an array of structures named "STUDENT" with fields name, cell no, address and percentage mark. Read the data pertaining to 'n' students and list the names of the students whose percentage marks is greater than or equal to 85.   **(12 Marks)**
   c. Write a function to add elements of an array using a pointer to an array.   **(04 Marks)**

8 a. Briefly explain command line arguments. Give an example.   **(05 Marks)**
   b. Explain : malloc ( ), calloc free ( ) and vealloc ( ). Give an example for each function.**(08 Marks)**
   c. What are files? What are different input and output modes?   **(05 Marks)**
   d. What is a macro?   **(02 Marks)**

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07MCA14

First Semester M.C.A. Degree Examination, June-July 2009
Problem Solving Using C

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Give and explain the structure of a C program. **(06 Marks)**
   b. Define an algorithm. Write an algorithm to compute the roots of a quadratic equation. **(08 Marks)**
   c. With reference to C language, explain the following:
      i) Identifiers;   ii) Constants;   iii) Keywords. **(06 Marks)**

2 a. With syntax and example, explain the concept of a switch statement. **(07 Marks)**
   b. Write a C program to find the sum of the individual digits of a given integer number. **(08 Marks)**
   c. Give the syntax of if... else statement and illustrate it with example. **(05 Marks)**

3 a. Write a program to sort the given list of numbers using selection sort. **(08 Marks)**
   b. Mention the different 'loop' control structures available in C. Explain each one of them briefly. **(12 Marks)**

4 a. Write a C program to accept the two matrices A (M x N) and B (P x Q) and find their product. **(10 Marks)**
   b. Write a C program to compare two strings without using string handling functions. **(06 Marks)**
   c. What is the output of the following program:

```
mainc)
{
int I = -3, j = 2, k = 0, m ;
m = ++i && ++j || ++k ;
printf (" \n % d % d % d % d", I, j, k, m) ;
}
```
   (04 Marks)

5 a. What is the need for user defined functions? Explain the categories of functions with suitable examples. **(12 Marks)**
   b. What is recursion? Write a C program to find the GCD of 2 numbers using recursion. **(08 Marks)**

6 a. Write a C function to swap the contents of two variables. Show how it is called? **(06 Marks)**
   b. Create a structure of employees having the following information:
      Employee id
      Employee name
      Date of joining
      Salary
      Write a C program to input information of 20 employees and display the details of the specified employee and display the details of the specified employee given the employee id. **(10 Marks)**
   c. Briefly explain how a structure differs from a union. **(04 Marks)**

7 a. Write a program to read data from the keyboard, write it to a file called "INPUT", again read the same data from the "INPUT" file and display item on the screen. **(10 Marks)**
   b. What is a pointer? Mention the advantages of pointers. Write a C program to find the largest of 2 numbers using pointers. **(10 Marks)**

8 a. What are preprocessor directives? Mention and explain the categories of directives with suitable examples. **(10 Marks)**
   b. Explain memory allocation function using suitable examples. **(10 Marks)**

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First Semester MCA Degree Examination, Dec.09/Jan.10
Problem Solving using C

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1   a. What is an algorithm? What are its characteristics?   (05 Marks)
    b. Write a flow chart for finding roots of a quadratic equation of the form $ax^2 + bx + c$.
                                                                                        (08 Marks)
    c. Describe the characteristics and purpose of escape sequence characters.   (05 Marks)
    d. What is the purpose of the qualifiers CONST and volatile?   (02 Marks)

2   a. Explain the different categories of C operators.   (10 Marks)
    b. Explain the formatted input/output function in C, with examples.   (06 Marks)
    c. Write a program to check whether the given integer is a perfect square or not.   (04 Marks)

3   a. Explain the switch statement, with example.   (04 Marks)
    b. Explain with examples, the working of for loop, while loop and do-while loop.   (09 Marks)
    c. Write a program to find sin(x) using the series for a given accuracy.
       $Sin (x) = x - x^3/3! + x^5/5! - x^7/7! + \ldots\ldots\ldots$ (07 Marks)

4   a. Write a program to read a positive integer and print its binary equivalent.   (06 Marks)
    b. What are arrays? Explain the different ways of declaration and initiation of arrays. (10 Marks)
    c. Write a program to reverse an array of n elements.   (04 Marks)

5   a. What is a string? Write a program that reads a string from the keyboard and determines
       whether the string is a palindrome or not.   (08 Marks)
    b. Explain any four string handling functions, with example.   (08 Marks)
    c. Explain different storage classes for variables.   (04 Marks)

6   a. What are functions? Explain the different categories of functions.   (12 Marks)
    b. Write a function that implements bubble sort algorithm for sorting an array of n elements in
       ascending order.   (08 Marks)

7   a. Define structure and union. Explain with examples.   (06 Marks)
    b. Define a structure called cricket that will describe the following information:
              player name
              team name
              batting average
       Using cricket, declare an array player with 50 elements. Write a program to read the
       information about all the 50 players and print a team-wise list containing names of players,
       with their batting averages.   (10 Marks)
    c. What are C pre-processor directives?   (04 Marks)

8   a. What are pointers? How are they useful? Explain with an example.   (05 Marks)
    b. Write a program using pointer to compute the sum of all elements, stored in an array.
                                                                                        (05 Marks)
    c. What are files? What are the different file access modes?   (05 Marks)
    d. Explain two different dynamic memory allocation functions, with examples.   (05 Marks)

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07MCA14

First Semester MCA Degree Examination, May/June 2010
Problem Solving Using C

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Explain the basic structure of a 'C' program.   **(06 Marks)**
   b. Describe the four basic data types. How could we extend the range of values they represent?
                                                                        (08 Marks)
   c. Describe the purpose of the qualifiers constant and volalite.   **(06 Marks)**

2 a. Write a note on :
     i) Bitwise operator ; ii) Conditional operator ; iii) Size of operator. **(06 Marks)**
   b. What is type conversion? Explain different types.   **(06 Marks)**
   c. Write a flow chart for finding the biggest among n numbers.   **(08 Marks)**

3 a. How does a control string in a printf ( ) function differ form the control string in a scanf ( ) function?   **(06 Marks)**
   b. What is the purpose of a "FOR" statement? Minimum how many times a for loop will be executed? Compare FOR with WHILE and DO-WHILE statement.   **(08 Marks)**
   c. Write a program to count number of 1s in a given binary number.   **(06 Marks)**

4 a. Write a program to find the number and sum of all integers greater than 100 and less than 200 that are divisible by 7.   **(10 Marks)**
   b. Compare the following pairs of statements:
      i)   Switch and nested-if-else statement
      ii)   Beak and continue
      iii) Goto and continue.   **(10 Marks)**

5 a. What is an array? Discuss how one dimensional arrays can be declared and their elements are accessed.   **(05 Marks)**
   b. Write a program to check whether an array is ordered. If ordered, print a suitable message as "ascending" or "descending" otherwise "not ordered".   **(10 Marks)**
   c. Write a program to get column-sums in a matrix of size m x n.   **(05 Marks)**

6 a. Explain any four string handling functions in C with appropriate examples.   **(08 Marks)**
   b. Write a function that conducts bubble-sorting of a given array elements in descending order.
                                                                        (08 Marks)
   c. With suitable example illustrate "call by value" and "call by reference" techniques of passing parameters in C.   **(04 Marks)**

7 a. What are structures in C? How are they different from unions? Give an example for a structure.   **(06 Marks)**
   b. Construct an array of structure called "student". The data numbers are name, USN, class grade and percentage mark. Read n records and conduct "linear search" to print the details of the student, given a particular USN as the key.   **(10 Marks)**
   c. Discuss, how a file can be opened in different modes.   **(04 Marks)**

8 a. What is a pointer? How do you declare a pointer variable? Explain. **(05 Marks)**
   b. Write a program using pointer to swap two numbers.   **(05 Marks)**
   c. What are the advantages of using an array name as a pointer?   **(05 Marks)**
   d. Explain the different pre-processor directives.   **(05 Marks)**

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