Register Number: ……..

**MCA DEGREE EXAMINATIONS: MAY/JUNE 2014**

(Regulation 2009)

First Semester

**MASTER OF COMPUTER APPLICATIONS**

MCA502: Problem Solving and Programming

**Time: Three Hours** **Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**

1. What are the factors used to analyze the efficiency of an algorithm?
2. Define algorithm.
3. What is swapping? Give an example.
4. Write an algorithm for finding maximum number in an array.
5. What are the basic steps involved in execution of the C program.
6. List the difference between Continue and Break statements in C.
7. What is the purpose of gets( ) and getchar( ) functions?
8. What is recursive function?
9. Define Void pointer.
10. Distinguish between feof( ) and ferror( ).

**PART B (5 x 16 = 80 Marks)**

11. a) (i) Explain about the top-down design methodology. (8)

(ii) Explain the program verification process in detail. (8)

**(OR)**

b) (i) How the program verification process carried out. (8)

(ii) Explain the efficiency of algorithm in detail. (8)

12. a) (i) Explain the Base Conversion algorithm with example. (8)

(ii) How to remove the duplicates entry from an ordered array? Explain with algorithm. (8)

**(OR)**

b) (i) Explain the algorithm for Greatest Common Divisor of two integers with flowchart. (8)

(ii) Explain the SINE Computation algorithm with flowchart. (8)



13. a) (i) Describe the different types of operators available in C with examples. (12)

(ii) Differentiate do-while with while loop. (4)

**(OR)**

b) (i) Explain in detail about the branching statements available in C with example. (10)

(ii) Write short note on I/O statements in C. (6)

14. a) Write a menu driven program which has the following options.
i) Factorial of a given number.
ii) To find whether the given number is prime or not.
iii) To find whether the given number is odd or even.
iv) Exit.

**(OR)**

b) (i) Explain the various categories of functions with example. (12)

(ii) How does union differ from structure? (4)

15. a) (i) Write a C program to find the smallest of ‘n’ numbers in an array using pointers. (8)

(ii) Explain the read and write operations done on files with examples. (8)

**(OR)**

b) (i) Write short notes on preprocessor directives in ‘C’. (8)

(ii) Explain how the insertion and deletion operations are performed in linked list. (8)

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