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M.C.A. DEGREE EXAMINATIONS: JANUARY 2011

First Semester

MASTER OF COMPUTER APPLICATIONS

MCA502: Problem Solving & Programming

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

Answer ALL Questions:-

PART A (10 x 2 = 20 Marks)

1. Define: Top down design.
2. What is program verification?
3. Write an algorithm for factorial computation.
4. What is counting? Give an example.
5. What are symbolic constants?
6. List the differences between Continue and Break
7. What is the difference between an array of character and a string?
8. What is call by value? Give an example.
9. What is void pointer?
10. Differentiate between static memory allocation and dynamic memory allocation

PART B (5 x 16 = 80 Marks)

11. (a) (i) List out and explain the problem solving aspects. (12)

(ii) Why should we need to study the efficiency of algorithm? (4)

(OR)

(b) (i) Describe the concepts involved in analysis of algorithm. (8)

(ii) Give brief note on each factor to be considered while implementing the algorithms. (8)

12. (a) (i) Explain base conversion algorithm with an example. (8)

(ii) Design an algorithm to find the greatest common divisor (GCD) of two integers. (8)

(OR)

(b) (i) Develop an algorithm to find the maximum number in a set. (8)

(ii) Develop an algorithm for removal of duplicates from an ordered array. (8)

13. (a) (i) Describe several types of operators that are included in C. (8)

(ii) Discuss the looping statements in C with an example (8)

(OR)

(b) (i) Write a C program to find the product of two matrices. (10)

(ii) Explain the concept of any three categories of the function. (6)

14. (a) (i) What are the commonly used Input/Output functions in C? How they are accessed?(8)

(ii) Discuss the decision making statements in C with an example. (8)

(OR)

(b) (i) Define a structure that can describe a employee information. It should have employeeno, name, dateofbirth, basicpay, DA, HRA, PF, LIC, Grosspay and Netpay. Grosspay and Netpay are to be calculated. Print the pay slip for all the employees. (10)

(ii) How can entire structure passed to a function? (6)

15. (a) (i) Using structure pointers, write a C program to create a linked list. (10)

(ii) Explain the concept of call by reference using pointer to function. (6)

(OR)

(b) (i) A file named “DATA” contains a series of integer numbers. Write a C program that reads all the numbers and writes all odd numbers to a file “ODD and all even numbers to a file “EVEN”. (10)

(ii) What is a preprocessor in C? Give an example. (6)

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