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MCS-011

14745

MCA (Revised)

Term-End Examination

December, 2013

MCS-011 : PROBLEM SOLVING AND PROGRAMMING

Time : 3 hours *Maximum Marks : **100***

(Weightage 75%)

Note : *Question number **1** is **compulsory**. Answer **any three** questions from the rest.*

1. (a) Explain comma and conditional operator in C language with examples. **6**

(b) Write an algorithm to calculate the factorial of a given number. **5**

(c) Write a program to add 2 matrices A and B of order 3×3. **6**

(d) Name different categories of constants in C language. **3**

(e) Write a program segment to generate the following pattern using *for* loop and *while* loop. **6**

1

1 2

1 2 3

1 2 3 4

(f) Explain the concept of Top Down Design Technique. 4

(g) Give the C expression for following algebraic expression 6

(i) $\dfrac{(a+b)^4 c^2 - d \times e}{m+n}$

(ii) $ab + (e-f)^4 \Big/ (c \times d)$

(h) What is a runtime error ? Explain with an example. 4

2. (a) What is an union ? Explain how a union is declared in C. Explain with an example how members of a union are accessed. Also, state the difference between an union and a structure. 10

(b) Explain syntax of Array declaration write a C program in C to multiply two matrices of 3×3 using arrays. 10

3. (a) Differentiate between macros and functions. Explain a situation when macro should be preferred over function. 4

(b) Write a macro to the display string INDIA in following pattern : **6**

```
I
IN
IND
INDI
INDIA
INDI
IND
IN
I
```

(c) What is a string ? Write a function in C to find a string length without using **strlen( )**. **10**

4. (a) What are array of pointers ? How they are declared and initialised ? Using pointers write a program to read and display list of names of students. **10**

(b) What is the purpose of using header files in C. Explain functions that are used in C for reading and writing of characters. Also, explain string input and output function in C. **10**

5. (a) Explain shift operators with examples. **4**

(b) Explain Random and Sequential Access Files. **4**

(c) Explain the use of following functions in C : **6x2=12**

(i)	malloc( )	(ii)	fopen( )
(iii)	fgets( )	(iv)	strcat( )
(v)	fputc( )	(vi)	fclose( )