

MCA (Revised) / BCA (Revised)

Term-End Examination

December, 2015

**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) Draw a flowchart and write a program in 'C' to implement binary search in a given list of numbers. 10
- (b) Explain the concept of dynamic memory allocation with an example. 10
- (c) Write a program in 'C' to find all Armstrong numbers in the range of 0 and 999. 10

Hint : An Armstrong number is an integer such that the sum of the cube of its digits is equal to the number itself, e.g. 153 is an Armstrong number.

- (d) Explain the use of the following data types with an example for each : 10
- (i) enumerated data type
 - (ii) type def
2. (a) Without using the 'strcpy' function write a program to copy the contents of string 2 to string 1, and find the length of the copied string using pointers. 10
- (b) Explain the relational operators in 'C' with an example for each. 5
- (c) What is type conversion ? What are the different ways of type conversion ? Explain with an example for each. 5
3. (a) Explain the use of the following statements with an example for each : 10
- (i) Goto
 - (ii) Break
 - (iii) Exit
 - (iv) Continue
- (b) Design an algorithm and draw a corresponding flowchart to convert a decimal number into an octal number equivalent. 10

4. (a) Write a program in 'C' to display the following output : 10

```
      1
     2 2 2
    3 3 3 3 3
   4 4 4 4 4 4 4
    3 3 3 3 3
     2 2 2
      1
```

- (b) Explain the following with examples : $4 \times 2 \frac{1}{2} = 10$
- (i) Unary operators in 'C'
 - (ii) Multidimensional Array
 - (iii) Syntax and Semantic errors
 - (iv) Size operator

5. (a) Write a program in 'C' to copy the content from one file to another file. 10
- (b) What is pointer-to-pointer ? Explain the need of pointer-to-pointer with an example. Also show how the address of variable in this case is calculated and determined. 10
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