

**DIPLOMA IN COMPUTER SCIENCE AND
TECHNOLOGY (DCSVI)/ADVANCED LEVEL
CERTIFICATE COURSE IN CSE (ACCSVI)**

Term-End Examination

December, 2011

BICS-029 : ALGORITHMS AND LOGIC DESIGN

Time : 2 hours

Maximum Marks : 70

Note : *Attempt any five questions. Each question carries equal marks.*

1. (a) Write an algorithm and design a flow - chart to sort three integers in ascending order. 8
(b) What do you mean by recursion ? Give recursive function to compute factorial of a given number. 6
2. (a) Write recursive method of binary search and analyze its complexity. 7
(b) Write an algorithm for fibonacci search and compare it with sequential search. 7
3. (a) What do you mean by stable sorting ? Give algorithm for any one stable sorting. 7
(b) Write algorithm for Bubble sort and apply this algorithm to sort following data. 7
6, 12, 2, 15, 3, 10, 5

4. (a) What do you mean by complexity of an algorithm ? Explain in terms of worst-case, average-case and Best-case analysis. 7
- (b) Find time complexity for following code. 7
- ```
for i := 1 to n do
 for j := 1 to n do
 for k := 1 to n do
 z := z + 1
```
- Explain why we do not compute the time required by an algorithm in real time ?
5. (a) Explain Feasibility study and requirement analysis phase of program development life cycle. 6
- (b) Suppose there are two algorithms to solve same problem, one having time complexity of the order  $O(n^2)$  and the other with time complexity of the order  $O(2n/6)$ . Which algorithm is better and under what circumstances ? Justify your answer. 8
6. (a) Write a program or algorithm to sort an array of ten numbers using merge sort. 7
- (b) Explain the sorting by exchange technique with suitable example. 7

7. Write short notes on *any four* :

**3.5x4=14**

- (a) Divide and conquer approach
  - (b) Backtracking
  - (c) Verification and validation
  - (d) Tail recursion
  - (e) Shell sort
  - (f) Program testing
-