No. of Printed Pages :2

BICS-029

DIPLOMA IN COMPUTER SCIENCE AND TECHNOLOGY (DCSVI)

01134

Term-End Examination

June, 2011

BICS-029 : ALGORITHMS AND LOGIC DESIGN

Time : 3 hours *Maximum Marks : 70*

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

1. (a) What is an algorithm ? What are its characteristics ? **5**

(b) Write an algorithm and design a flow-chart to find greatest among three numbers. **9**

2. (a) Write an algorithm to search an element in the array using sequential search technique. **7**

(b) Differentiate between binary search and fibonacci search techniques. **7**

3. (a) How to test a program ? Explain with example. **6**

(b) What is program development life cycle ? Explain all it's stages. **8**

4. (a) Write an algorithm for merge sort. Sort the following data to validate your algorithm. 5, 2, 4, 6, 1, 3, 9, 7 — 7

(b) Write an algorithm for quick sort. Analyze the complexity of your algorithm. — 7

5. (a) What do you mean by time complexity of an algorithm ? Explain Big-Oh and Big-Omega notations. — 8

(b) Solve the following recurrence relation using iteration method. — 6

$T(n) = T(n-1) + n^4$

6. (a) Write Pseudo code for insertion sort. — 7

(b) Design a flow chart to arrange 10 numbers in ascending order. — 7

7. Write short notes on ***any four*** : — **3.5x4=14**

(a) Recursive Algorithm

(b) Recursive Binary Search

(c) Space and Time Complexity

(d) Bucket Sort

(e) Shell Sort

(f) Binary Search Tree