Council for Technical Education and Vocational Training
Office of the Controller of Examinations
Sanothimi, Bhaktapur
Regular/Back Exam-2078, Kartik/Mangsir

Program:	**Diploma in IT / Computer Engineering**	**Full Marks: 80**
Year/Part:	**II/I (2016, 2018 New Course)**	**Pass Marks: 32**
Subject:	**Data Structure & Algorithm**	**Time: 3 hrs**

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Attempt Any Eight questions.

1. Illustrate the importance of stack with definition. Write source code to implement stack operation. [4+6]
2. Explain queue with an example? Write an algorithm of circular queue. [10]
3. Write algorithm to insert and delete a node after an existing node in doubly linked list. [10]
4. How does recursion differ from other function? Write a recursive function to find the factorial of an input integer. [4+6]
5. What is AVL tree? Draw the AVL tree for the following sequence of data: [10]
   2, 7, 6, 4, 9, 10, 12, 8, 5
6. Define Tree with example. Draw the binary search tree for: [2+8]
   Pre-order: ABCEIFJDGHKL
   in-order: EICFJBGDKHLA
7. What is array? List some examples array application. Write codes to search an integer 40 in array list of 15 elements. [2+2+6]
8. What is sorting? Sort the following list of numbers using insertion sort. [10]
   44, 33, 55, 77, 90, 40, 60, 99, 22, 88, 66
9. Explain the various types of graph with example. [10]
10. Write short notes on : **(Any Two)** [2x5=10]
    a) Linear queue
    b) Linked list
    c) Depth first traversal
    d) Hashing

Good Luck !