

Council for Technical Education and Vocational Training
Office of the Controller of Examinations
Sanothimi, Bhaktapur
Regular/ Back Exam- 2073, Falgun

Program: Diploma in Computer/ IT Engineering **Full Marks: 80**
Year/Part: II/I (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 Five questions.

1. (a) Why data structure is needed? Explain the basic operation in stack. [2+6]
(b) convert the following infix expression to post fix expression: [8]
 $A * (B + C * D) - E * F * (G / H)$
2. (a) Define Queue. Differentiate between Enqueue and dequeue algorithm with suitable example. [2+6]
(b) Define link list. Explain the structure of link list and list. Out the advantage & disadvantage of link list. [2+6]
3. (a) List out properties of recursion. Write an algorithm and recursive function to find the Fibonacci sequence of given number. [2+6]
(b) Construct AVL tree for given data: [8]
50, 40, 35, 58, 48, 42, 60, 30, 33, 32
4. (a) What is binary tree? Explain pre-order, In-order and post-order traversal with structure. [2+6]
(b) Sort the following data using bubble sort 13, 32, 20, 62, 68, 52, 38, 46. [8]
5. (a) Suppose we have following data: [8]
44, 33, 11, 55, 77, 90, 40, 60, 99, 22, 88, 66. Now sort them using insertion sort.
(b) Explain the types of algorithm of graph traversal with suitable example. [8]
6. Write short notes on: **Any Four** [4x4=16]
(a) ToH problem (b) B-Tree (c) Methods of specifying ADT.
(d) Algorithm of selection sort (e) Hash function and Hash table

Good Luck