

Tribhuvan University
Institute of Science and Technology
2078

Bachelor Level / Third Semester / Science

Computer Science and Information Technology(CSC206)

((TU CSIT) Data Structures and Algorithms)

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Full marks: 60

Pass marks: 24

Time: 3 hours

Long Answer Questions.

Attempt any Two questions: (2x10=20)

1. Define queue. What are different applications of queue? Explain queue operations with example. (1+2+7)
2. Explain circular linked list with example. How do you implement linked list operation in singly linked list? Explain. (4+6)
3. What is binary search tree? Write a program to implement insertion and deletion algorithm in binary search tree? (2+8)

Short Answer Questions.

Attempt any Eight questions: (8x5=40)

4. How do you find complexity of algorithms? Explain.
5. Evaluate the expression $ABCD-x+$ using stack where $A=5$, $B=4$, $C=3$ and $D=7$.
6. What is priority queue? Why do we need this type of queue?
7. Write recursive program to find n^{th} fibonacci number.
8. Explain array implementation of lists.
9. Hand test selection sort with array of numbers 4, 71, 32, 19, 61, 2, -5 in descending order.
10. Write a program to implement sequential search algorithm.
11. What is graph traversal? Explain.
12. Write short notes on: (2 x 2.5 = 5)
 - a) Divide and conquer sorting
 - b) AVL tree