



Tribhuvan University
Faculty of Humanities & Social Sciences
OFFICE OF THE DEAN
2024

Bachelor in Computer Applications

Course Title: Data Structure and Algorithms

Code No: CACS 201

Semester: III

Full Marks: 60

Pass Marks: 24

Time: 3 hours

Candidates are required to answer the questions in their own words as far as possible.

Group B

Attempt any SIX questions.

[6×5 = 30]

2. Differentiate between stack and queue. What are the general applications of a stack? [2+3]
3. What is a linked list? How doubly linked list is different from circular linked list? Explain with example. [1+4]
4. What is recursion and recursive function? Write a recursive function to compute Fibonacci number. [2+3]
5. How does collision occur during hashing? Explain any two hashing functions. [3+2]
6. What is an AVL tree? Create an AVL tree from the following data: [1+4]
 18, 12, 14, 8, 5, 25, 31, 24, 27
7. What are deterministic and non-deterministic algorithms? Explain the use of Big Oh notation to measure the complexity of an algorithm with an example. [2+3]
8. Implement the quick sort to sort the following data items: [5]
 12, 1, 14, 7, 2, 10, 4, 7, 22, 6, 15



Group C

Attempt any TWO questions.

[2×10 = 20]

9. What are the differences between linear queue and circular queue? Write an algorithm to enqueue and dequeue data elements in a circular queue. [4+3+3]
10. What is B-tree? How insertions and deletions of elements can be done in a B-tree. [2+8]
11. Explain the different ways to represent a graph. For the following graph use Prim's algorithm to find a minimum spanning tree starting from the node 'A'. [5+5]

