



Tribhuvan University
Faculty of Humanities & Social Sciences
OFFICE OF THE DEAN
2019

Bachelor in Computer Applications
Course Title: Data Structures & 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. What is Data Structure? Show the status of stack converting following infix expression to post fix $P + Q - (R * S / T + U) - V * W$ [1+4]
3. Write binary search. Consider a hash table of size 10; insert the keys 62, 37, 36, 44, 67, 91 and 107 using linear probing. [2+3]
4. What are deterministic and non-deterministic algorithms? Explain greedy algorithm. [3+2]
5. Draw a BST from the string DATASTRUCTURE and traverse the tree in post order and preorder. [3+2]
6. Define circular queue? How does circular queue overcome the limitation of linear queue? Explain. [2+3]
7. What is singly linked list? Write an algorithm to add a node at the beginning and end of singly linked list. [1+4]
8. Define AVL tree. Construct AVL tree from given data set: 4, 6, 12, 9, 5, 2, 13, 8, 3, 7, 11. [2+3]

Group C

Attempt any TWO questions.

[2×10 = 20]

9. What is stack? List the applications of stack. Write an algorithm or procedure to perform PUSH and POP operation in stack. [1+2+7]
10. What is heap? Explain quick sort algorithm with Big-oh notation in best case, average case and worst case and trace it to sort the data: 8, 10, 5, 12, 14, 5, 7, 13. [2+2+6]
11. Define graph and tree data structure. Explain breadth first traversal and depth first traversal with example.