



Tribhuvan University
Faculty of Humanities & Social Sciences
OFFICE OF THE DEAN
2020

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? Explain different operations to be performed on data structure. [1 + 4]
3. Define greedy algorithm and heuristic algorithm. Briefly explain Big-Oh notation. [3+2]
4. What is circular queue? Write an algorithm to insert an item in circular queue. [2 + 3]
5. How does AVL tree differ from BST? Construct an AVL tree from following data: 35, 56, 68, 65, 44, 41, 31, 49, 20. [1+4]
6. What is B-tree? Create a B- tree of order 4 using following data: 6, 4, 22, 10, 2, 14, 3, 8, 11, 13, 5, 9. [2 + 3]
7. What is binary search? Write an algorithm to search an item using binary search. [2+3]
8. What is graph? Explain Kruskal's algorithm to construct minimum spanning tree with example. [1 + 4]

Group C

Attempt any TWO questions.

[2×10 = 20]

9. Define stack. List the applications of stack. Trace the algorithm to convert infix to postfix with following infix expression $((A+B)-C*D/E)*(H-I)*F+G$ and evaluate the obtained postfix expression with following values: A=4, B=2, C=4, D=3, E=8, F=2, G=3, H=5, I=1 [1 +1+4+ 4]
10. What is double linked list? How does it differ from circular linked list? Write an algorithm or function to add a node at the beginning and end of double linked list. [1 +1+4+ 4]
11. What is heap? Differentiate between min heap and max heap. Sort the following data in ascending order by heap sort method: 2, 9, 3, 12, 15, 8, 11. [2+2+6]