Exam Roll No.....

Tribhuvan University
Institute of Science and Technology
2082
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Bachelor Level / Second Year/ Third Semester/ Science
Computer Science and Information Technology (CSC 206)
(Data Structure and Algorithms)
(OLD COURSE)

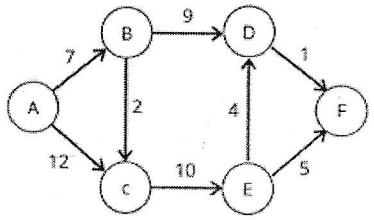
Full Marks: 60
Pass Marks: 24
Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Section A

Attempt any TWO questions. **(2 × 10 = 20)**

1. How do you implement queue as linked list? Explain the types of linked lists. [3 + 7]
2. Compare the insertion and selection sort. Write the algorithm for any one sorting algorithm that follows divide and conquer paradigm. [4 + 6]
3. Trace the binary search tree for the input {34, 78, 3, 2, 90, 45, 56, 33, 55, 7}. Find the shortest path from A to F using Dijsktra algorithm. [4 + 6]



Section B

Attempt any EIGHT questions. **(8 × 5 = 40)**

4. Describe about the functions used as asymptotic notation. [5]
5. Convert the infix expression A * B * C + D – E to postfix using stack. [5]
6. Explain any two types of queue. [5]
7. What is recursion? Write the recursive algorithm to find the factorial value of any given positive integer. [1 + 4]
8. Differentiate between sequential search and binary search. [5]
9. What is hash collision and how do you solve it? Explain. [5]
10. Why do we need data structure? How do you delete node at first and last position in circular linked list? [1 + 4]
11. Define stack. Sort the data {34, 7, 12, 8, 5} using bubble sort. [1 + 4]
12. Why queue is ADT? Write the Prim's algorithm to find the minimum spanning tree. [1 + 4]