

## POKHARA UNIVERSITY

Level: Bachelor Semester – Spring Year : 2010  
Programme: BE Full Marks: 100  
Course: Data and File Structure Pass Marks: 45  
Time : 3hrs.

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

*The figures in the margin indicate full marks.*

***Attempt all the questions.***

1. a) What is data structure? How do you represent polynomial as an ADT? 7  
b) Write an algorithm to convert an infix expression to postfix expression. Evaluate the following post expression using stack  
 $296+*23*-$  8
2. a) Discuss the advantage of circular queue over linear queue. Write a C/C++ code to perform enqueue and dequeue operations on a circular queue in array implementation. 7  
b) Write an algorithm to insert an item at the beginning of a linked list and an algorithm to display the items of the list. 8
3. a) What is tree traversal? Explain preorder, inorder and postorder tree traversal by constructing expression tree of the given expression.  
 $b*b-4*a*c$  7  
b) Define AVL tree. What is balancing factor of AVL tree? Construct AVL tree from the following data: 8  
50, 40, 70, 45, 43, 35, 25

**OR**

- a) Define max and min heap tree. Construct a min heap using following data: 6+2  
44, 30, 50, 22, 60, 55, 77, 55.

- b) What do you mean by thread? Explain in order threading with example. 7
4. a) Sort the following data using merge-sort algorithm: 7  
66, 33, 40, 22, 55, 88, 60, 11, 80, 20, 50, 44, 77
- b) Describe primitive operation of file. 8
5. a) Enlist the basic Unix file system commands along with their functions. Also explain the Unix file Directory structure. 8
- b) Assume that, we have 40,000 records each of size 100 bytes. If we want to store the file in a 6250 bpi tape that stores 200 bytes/block and inter block gap of 0.3 inches, how much tape is needed. If B. F. is made 50, what is the effect? 7
6. a) Define the term file and record. What are the different methods that are used for organizing the field structure within the records of a file? Explain. 7
- b) How classes are used to manipulate buffer? How inheritance applied to record buffered class? 8
7. Write short notes on **any two**: 2×5
- a) Divide and conquer algorithms
- b) Huffman algorithm
- c) Strength and weakness of CD-ROM