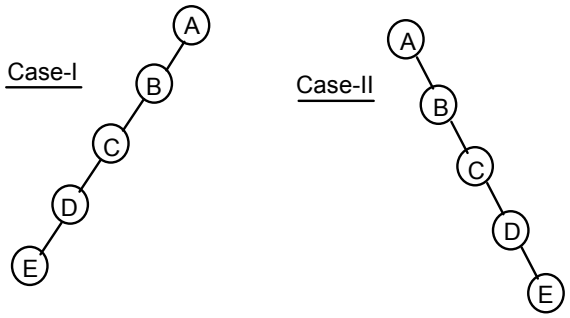
**B.Sc. (Honours) Examination 2018**
**Semester-III**
**Computer Science**
**Course : CC-5**
**(Data Structure)**

**Time : 3 Hours** **Full Marks : 40**

Questions are of value as indicated in the margin

Answer **any four** questions.

1. a) Calculate the hash value of 3456 using (i) Mid square method (ii) Folding method.
   b) What do you mean by clustering? How one can overcome it?
   c) What are the advantages of collision resolution by chaining? (2+2)+4+2=10
2. a) Define a rooted ordered tree, binary tree.
   b) How a rooted ordered tree can be represented in a computer?
   c) Present an iterative function to compute the inorder traversal of a binary tree. 2+3+5=10
3. Compare and contrast the following data structures in relation to linear hist of data items – (i) Static Array, (ii) Dynamic Array, (iii) Single linked list, (iv) Double linked list, (v) Circular linked list. 25=10
4. a) Explain, with suitable example, the functioning of a quene, clearly indicating the associated (i) insertion, (ii) deletion operations.
   b) Explain the importance of stack by clarifying its associated operations. 6+4=10
5. a) What will be the (i) Inorder, (ii) Preorder and (iii) Postorder traversals of the followings –




   Hence, can you find any interesting observation?
   b) What will be the (i) prefix and (ii) portfix representations of
   $((a+b)*(c+d))-((c*a)+(b*d))$ (2×3)+2+2=10
6. a) Define a binary search tree. Construct a binary search tree from the following data items-
   35, 26, 73, 39, 24, 45, 62, 57, 49, 41.
   b) With an example, explain height balancing. Why height balancing in necessary? In this context, indicate what is balance factor? (2+4)+2+1+1=10

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