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**XEV (H-II) – BCA (4)**

**2016**

*Time : 3 hours*

*Full Marks : 75*

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

*The questions are of equal value.*

*Answer any five questions.*

1. What do you mean by data-structure ? What are the differences between data type and abstract data-type ?
2. What are doubly linked list ? What is the difference between a linked list and circular linked list ?
3. What is recursion ? What are the different types of recursion ? What is the need of stack in implementing a recursive function ?
4. Define the term queue and de-queue ? Write an algorithm to implement queue by using linked list.
5. What do you mean by binary tree ? Write a recursive function for inorder, post order and pre order traversal of a binary tree.

6. What is a graph ? Compare graph with tree. When does a graph become a tree ?
7. (a) What do you mean by linear search and binary search ? Explain with example.  
(b) List the advantages of binary search over linear search.
8. Explain about the different types of sorting. Give an algorithm for heap sort. Also calculate the complexity.
9. (a) What do you mean by an array ? Give their characteristic features.  
(b) Construct the given infix expression into postfix expression  $A + (B * C - (D / E + F) * G) * H$ .
10. Write short notes on any two of the following :
- (a) Priority queue
  - (b) Stack and queue as a circular linked list
  - (c) Depth and breadth first search
  - (d) Collision resolution techniques
  - (e) Heap sort