Code No: R059210503 **Set No. 1**

II B.Tech I Semester Regular Examinations, November 2007
ADVANCED DATA STRUCTURE
(Common to Computer Science & Engineering and Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What do you mean by Encapsulation and explain in detail.
   (b) Explain about friend and inline functions? [8+8]
2. (a) What's the deal with operator overloading?
   (b) What are the benefits of operator overloading?
   (c) What are some examples of operator overloading?
   (d) What operators can/cannot be overloaded? [4+4+4+4]
3. (a) Why should we use iostream instead of the traditional cstdio?
   (b) Why does a program go into an infinite loop when someone enters an invalid input character?
   (c) How can we get std::cin to skip invalid input characters? [5+6+5]
4. What is a Circular List? Write a C++ program to search in a circular linked list that has a header node? [16]
5. (a) What is the structure to represent node in a skip list. Write the constructor for skipList.
   (b) Write a method in C++ to erase a pair in the dictionary with key theKey in a skip list representation. What is the complexity of this method? [8+8]
6. (a) State the conditions under which insertion of a vertex in a Red-Black tree will result in a sequence of recolouring steps that terminate with the root changing colour.
   (b) Will the root of a Red-Black tree always be black after performing a deletion operation? Justify with an example? [8+8]
7. (a) Prove that net T be a B-tree of order m and height h. Let d = $[m/2]$ and let n be the number of elements in T.
      i. $2d^{h-1} - 1 \leq n \leq m^n - 1$
      ii. $\log_m (n+1) \leq h \leq \log_d \left(\frac{n+1}{2}\right) + 1$
   (b) Explain the advantages of splay tree in representation of dictionaries. [10+6]
8. (a) Describe about search engine and inverted files.
   (b) Explain the main features of Boyer-Moore algorithm. [10+6]

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