Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 60375

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Third Semester

Computer Science and Engineering

CS 2201/CS 33/080230007/10144 CS 302 – DATA STRUCTURES

(Regulations 2008/2010)

(Common to 10144 CS 302 – Data Structures for B.E. (Part-Time) Second Semester CSE – Regulations 2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define ADT.
2. Write a C routine to deallocate the entire linked list.
3. Draw the expression tree for $((b+c)*a)+((d+e*f)+g)$.
4. What are the advantages of threaded binary tree?
5. List the operations performed in splay trees?
6. Differentiate datagram and byte streams.
7. List the applications of set.
8. What is the basic difference between static hashing and dynamic hashing?
9. What are Euler circuits?
10. What is a spanning tree?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the insertion deletion and traversal operations in a circularly doubly linked list with suitable ADTs and examples. (16)

Or

(b) (i) Write ADT operations for a linear queue using array implementation. (8)

(ii) Write functions to multiply two polynomials using linked list implementation. (8)

12. (a) Explain the tranversals of binary tree with examples. (16)

Or

(b) Describe the operations of binary search tree with functions. (16)

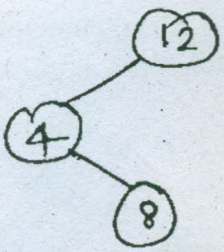
13. (a) Construct B tree to insert the following key elements (consider order of the B tree is 3)

55, 4, 44, 3, 6, 7, 9, 45, 46, 56, 57.

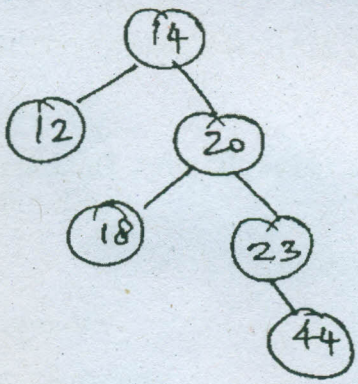
Or

(b) Construct AVL tree for the following after rotation. (4 + 8 + 4)

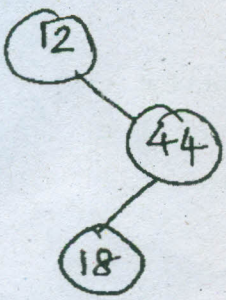
(i)



(ii)



(iii)



14. (a) Write a program to implement extendible hashing. If the table is small enough to fit in main memory, how does its performance compare with open and closed hashing.

Or

(b) (i) Discuss the path compression with suitable example. (8)

(ii) Explain the dynamic equivalence problem with an example. (8)

15. (a) Develop an algorithm to compute the shortest path using Dijkstra's algorithm. Validate the algorithm with a suitable example. (16)

Or

(b) Develop an algorithm to find the minimal spanning tree using Prim's algorithm. Validate the algorithm with a suitable example. (16)
