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Question Paper Code : 42372

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Third Semester

Computer Science and Engineering

CS 2201 – DATA STRUCTURES

(Regulations 2008)

(Common to PTCS 2201 – Data Structures for B.E. (Part-Time) Third Semester –
CSE – Regulations 2009)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. What is an abstract data type ?
2. Define an array. Give example.
3. What is binary tree ?
4. Construct an expression tree for the arithmetic expression $a + (b * c)$.
5. What is a B-tree ?
6. Define a heap.
7. What is a hash function ? Give example.
8. Define an equivalence relation.
9. What is an Euler circuit ?
10. Define an undirected graph.

PART – B

(5×16=80 Marks)

11. a) i) What is a doubly linked list ? Explain with a diagram. (4)
ii) Explain with an example cursor implementation of a linked list. (12)
- (OR)
- b) What is a stack ADT ? Explain with an algorithm and relevant diagrams the operations that can be performed on a stack ADT. (16)



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12. a) Explain with an algorithm and an example preorder, inorder and postorder traversal on a binary tree. (OR) (16)

b) What is a binary search tree? Explain with an example the algorithm for inserting a node in a binary search tree and deleting a node from a binary search tree. (16)

13. a) What is an AVL tree? Explain with an example the algorithm for inserting a node in an AVL tree and deleting a node from an AVL tree. (OR) (16)

b) What is a splay tree? Explain with an example the algorithm for inserting a node in a splay tree and deleting a node from a splay tree. (16)

14. a) What is a hash table? What is collision? Explain with an example linear probing and quadratic probing open addressing techniques for collision resolution. (OR) (16)

b) i) Explain with an example the dynamic equivalence problem. (8)
ii) Outline with an example the smart union algorithm. (8)

15. a) Explain with an example breadth-first search traversal and depth-first search traversal of a graph. (OR) (16)

b) What is a minimum spanning tree? Explain with an example Kruskal's algorithm for constructing a minimum spanning tree. (16)