

Total No. of Questions—8]

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[5668]-208

S.E. (I.T.) (Second Semester) EXAMINATION, 2019

DATA STRUCTURES AND FILES

(2015 PATTERN)

Time : Two Hours

Maximum Marks : 50

N.B. :— (i) Answer four questions.

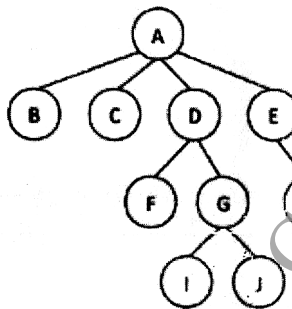
(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Assume suitable data, if necessary.

1. (a) Explain the concept of stack. What is implicit and explicit stack ? Explain both of them with suitable example. [6]

(b) Differentiate general tree and binary tree. Convert given general tree to binary tree and write down the steps required for the same. [6]



P.T.O.

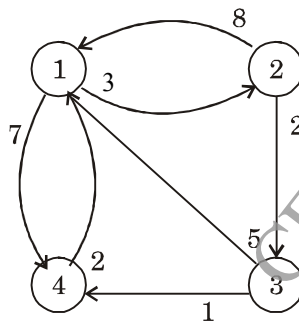
Or

2. (a) Write short notes on:
- (i) Priority Queue. [3]
 - (ii) Double Ended Queue. [3]
- (b) Explain any *three* applications of stack with appropriate example. [6]

3. (a) What is topological sorting ? Where Topological sorting can be applicable ? Explain it with suitable example. [6]
- (b) Write different characteristics of good hash function. What are different key to address transformation techniques ? Explain any *one* with suitable example. (Take minimum 10 keys to explain the technique). [6]

Or

4. (a) Apply Warshall's algorithm to find shortest path from all sources to all destinations. [4]



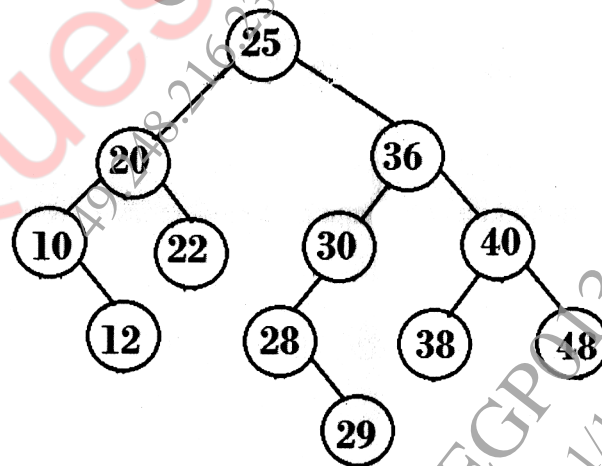
- (b) Which data structures supports to perform sorting using heap data structure ? Explain their use in detail for the following list to sort it in ascending order : [8]

1, 12, 9, 5, 6, 10

5. (a) Write C++ function for implementation of In-order traversal of in-order threaded binary tree. [6]
(b) Compare B tree and B+ tree with different parameters. [4]
(c) Write a short note on Red and Black Trees. [4]

Or

6. (a) For a given tree, identify whether it is AVL tree or not ? If it is not an AVL tree, convert it into balanced AVL tree. After conversion, insert node 15 and 24 in the tree. Delete node 20 and 22 from the tree. After insertion and deletion operation, if the tree is imbalanced, make it balanced AVL tree. [10]



- (b) Write a short note on splay tree. [4]

7. (a) What is delete operation of records in file data structure? How records are logically deleted from file ? [4]
- (b) Explain why file opening modes are important while opening any file ? Explain significance of the following modes : [8]
- (i) ios :: app
 - (ii) ios :: ate
 - (iii) ios :: in
 - (iv) ios :: out
 - (v) ios :: binary
 - (vi) ios :: trunc.

8. (a) Explain prototype of the following function in C++ with example : [8]
- (i) seekg
 - (ii) seekp
 - (iii) tellg
 - (iv) tellp.
- (b) Explain stream class in C++. Which class can be used for input and output purpose ? Is there any more class is available with which both input and output purpose get fulfill ? [4]