

G.R. No.

DECEMBER 2019/ENDSEM - Backlog Exam
S. Y. B. TECH. (INFORMATION TECHNOLOGY)
(SEMESTER - II)
COURSE NAME: DATA STRUCTURES AND FILES
COURSE CODE: ITUA22173
(PATTERN 2017)

Time: [2 Hours]

[Max. Marks: 50]

(*) Instructions to candidates:

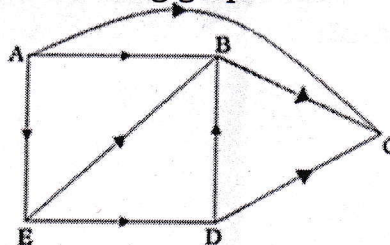
- 1) Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8
- 2) Figures to the right indicate full marks.
- 3) Write suitable examples wherever necessary.
- 4) Draw suitable diagrams if required.

- Q.1) a) What is binary search tree? What are its advantages over general binary tree? [6]
 Create BST for 65,32,12,25,77,45,79,89,8,10,99,65

OR

- b) What are expression trees? Represent the following expression using a tree. Comment on the result that you get when this tree is traversed in Preorder, Inorder and postorder. [6]
 $(a-b) / ((c*d)+e)$

- Q.2) a) Write algorithm for Depth First Search(DFS) of a graph. [6]
 Perform DFS on the following graph.



OR

- b) Write a pseudo code for Kruskal's algorithm. [6]

- Q.3) a) Assume a hash table of size 7 and hash function $h(x) = x \bmod 7$. Perform linear probing with chaining without replacement for the following values. [6]

2,8,14,66,22, 47, 56,9,55,39,41,42

OR

- b) Compare AVL tree and Red and Black tree with example. [6]

Q.4) a) Write the importance of Huffman's algorithm with example. [4]

OR

b) What are different types of heap? Write examples of each. Write any 2 applications of heap data structure? [4]

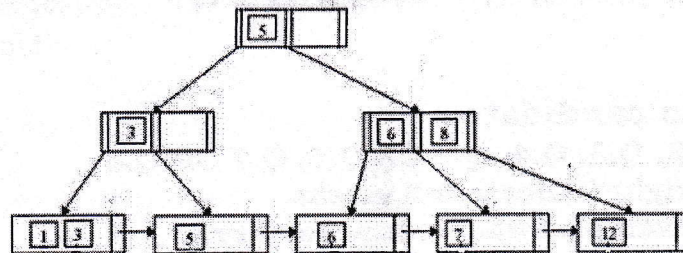
Q.5) a) Explain and give example i) B+tree ii) Splay trees [6]

b) Explain the AVL tree and its rotation types. [4]

c) List the types of multi-way trees and explain applications of the same. [4]

OR

Q.6) a) Identify the given data structure and explain. Also list the applications. [6]



b) Explain splay trees in detail. [4]

c) Compare B-tree and R-tree with example and application. [4]

Q.7) a) Explain sequential file with advantages, disadvantages and example. [6]

b) Write a pseudo code for searching a record in direct access file. [4]

c) Write syntax of functions for opening and closing file in C++. [4]
Explain different file opening modes in C++.

OR

Q.8) a) List and compare different types of file organizations. [6]

b) Explain any two types of external storage devices. [4]

c) Explain different C++ functions used for navigation in file. [4]
Write syntax and example.

2/2