

CBCS SCHEME

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15IS62

Sixth Semester B.E. Degree Examination, Feb./Mar. 2022 File Structures

Time: 3 hrs.

Max. Marks: 80

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. How data is physically stored on CD – ROM? What are the major strength and weakness of CD – ROM? (05 Marks)
- b. What is seeking and how is it supported in “C streams” and C++ streams”? (06 Marks)
- c. Suppose a block-addressable disk drive with 20,000 bytes/track and amount of space taken by the overhead sub block is 300 bytes/block. The file contains 100 bytes records on disk. How many records can be stored per track, if the blocking factor is 10? (05 Marks)

OR

- 2 a. What is record? What are the way in which record can be organized on a file? (05 Marks)
- b. Store a file with 50,000 fixed length records on a computer disk with following characteristics,
Numbers of bytes/sector = 512
Number of sectors/track = 63
Numbers of tracks/cylinder = 16
Number of cylinders = 4092
i) How many cylinders does the file require if each data record requires 256 bytes?
ii) How much internal fragmentation is caused by all records?
iii) What is total capacity of disk? (06 Marks)
- c. Explain the hierarchy for record buffer objects. (05 Marks)

Module-2

- 3 a. What is data compression? Explain different types of data compression methods. (08 Marks)
- b. Explain how spaces can be reclaimed form deletion of records from fixed length record files. (08 Marks)

OR

- 4 a. What is an Index? Explain simple index for entry sequenced file with example and operations to maintain simple index. (08 Marks)
- b. Explain key sorting methods with C++ program with examples. Mention the limitation of key sort method. (08 Marks)

Module-3

- 5 a. What is consequential processing? Explain K-way merge algorithm. Illustrates the use of selection tree to assist in the selection of a key with minimum value. (08 Marks)
- b. What is multilevel indexing? Explain the creation of a B-Tree with example. (08 Marks)

15IS62

OR

- 6 a. Explain indexing with binary search tree and what are its disadvantages. (08 Marks)
b. With reference to B-tree explain the following :
i) Worst – case search depth
ii) Deletion and merging. (08 Marks)

Module-4

- 7 a. Explain the simple – prefix B⁺ tree and its maintenance. (08 Marks)
b. Compare accessing mechanisms and perspective of B-trees, B⁺ – trees and simple prefix B⁺ trees. (08 Marks)

OR

- 8 a. Explain the internal structure of index set blocks. (08 Marks)
b. Explain how adding a simple index to the sequence set. (08 Marks)

Module-5

- 9 a. Briefly explain the different collision resolution techniques by progressive overflow method. (08 Marks)
b. Briefly explain the concept of extendible hashing techniques. (08 Marks)

OR

- 10 a. Briefly explain what is hashing? Illustrate the three steps used in a simple hashing algorithm. (08 Marks)
b. Suppose that 1000 addresses are allocated to hold 500 records in a randomly hashed file, with each address can hold one record. Compute the following :
i) The packing density
ii) The expected number of addresses with number records assigned to them
iii) The expected number of address with exactly one record assigned to them.
iv) Percentage of overflow records. (08 Marks)
