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10IS63

Sixth Semester B.E. Degree Examination, Dec.2023/Jan.2024
File Structures

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO full questions from each part.***

PART – A

1 a. Describe the relation between the physical file and the logical file. **(04 Marks)**

b. Briefly explain the different basic ways to organize the data on a disk. **(10 Marks)**

c. Calculate the space required on tape if we want to store the 1 million 100 bytes records on a 7250 bpi tape, that has an internal block gap of 0.2 inches and with a blocking factor of 60. Hence calculate the space required. **(06 Marks)**

2 a. What are the different ways of adding structures to a file to maintain the identity of records? Explain each with examples. **(10 Marks)**

b. Define the following terms:
i) File-access method
ii) Meta-data
iii) RRN
iv) Template class. **(04 Marks)**

c. Design an algorithm for sequential-search. **(06 Marks)**

3 a. Define data compression. Explain irreversible compression techniques. **(06 Marks)**

b. Explain the key-sorting techniques and their limitations. **(06 Marks)**

c. What is meant by an index? Explain the operations required to maintain the index files. **(08 Marks)**

4 a. Explain the object-oriented mode for implementing co-sequential process. **(10 Marks)**

b. Briefly explain the different methods used to sort files on a tape. **(10 Marks)**

PART – B

5 a. Define a B-tree. Explain the creation of a B-tree, with examples. **(10 Marks)**

b. Explain deletion, merging and redistribution of elements in a B-tree. **(10 Marks)**

6 a. Explain the block splitting and merging due to insertion and deletion in the sequence set, with examples. **(10 Marks)**

b. Explain the simple-prefix B+ tree. **(05 Marks)**

c. Compare the strengths and weakness of B+ trees and B-trees. **(05 Marks)**

7 a. Define hashing. Explain a simple hashing algorithm. **(10 Marks)**

b. Explain the double hashing and chained progressive overflow collision resolution techniques. **(10 Marks)**

8 a. Explain the working of extendible hashing. **(10 Marks)**

b. Write short notes on:
i) Dynamic hashing
ii) Linear hashing. **(10 Marks)**

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