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10IS63

**Sixth Semester B.E. Degree Examination, June/July 2016**  
**File Structures**

Time: 3 hrs.

Max. Marks: 100

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

**PART – A**

- 1 a. Explain briefly the evolution of file structures design. (05 Marks)
- b. Suppose it is needed to store a backup of a large mailing list with one million records of 1 hundred bytes record on a 2400 foot reels of 6250 bpi –tape with an internal block gap of 0.3 inch and tape speed is 200 inches per second.
  - i) What would be the minimum blocking factor required to fit the file on to the tape?
  - ii) If a blocking factor of 50 is used how long would it take to read one block including the gap?
  - iii) How long it would take to read to entire file? (08 Marks)
- c. Explain the functions of READ, WRITE and SEEK with parameters. (07 Marks)
- 2 a. What are the different ways of adding structures to a file to maintain the identity of fields ? (10 Marks)
- b. Explain the concept of inheritance using I/O buffer class hierarchy. (06 Marks)
- c. Define the following terms:
  - i) File access method
  - ii) Meta-data
  - iii) RRN
  - iv) Template class. (04 Marks)
- 3 a. How spaces can be reclaimed from deletion of records from fixed length record file and variable length record file? (10 Marks)
- b. What is data compression? Explain different techniques available for data compression. (10 Marks)
- 4 a. Explain the object-oriented model for implementing co-sequential process. (08 Marks)
- b. With example, explain K-Way merge and selection tree for merging large number of lists. (06 Marks)
- c. Write a algorithm for heap sorting method for insertion. Show the construction of heap tree for following sequence FDCGHIBEA (06 Marks)

**PART – B**

- 5 a. Define a B-tree. Explain the creation of a B-tree, with examples. (10 Marks)
- b. What are the properties of B-tree? Explain worst case search. (06 Marks)
- c. List the four properties of B\* trees. (04 Marks)
- 6 a. With an example, explain adding a simple index to the sequence set. (10 Marks)
- b. Explain how to load a simple prefix B+ tree. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 7 a. Suppose that 1000 locations are allocated to hold 700 records in randomly hashed file and that each address can hold 4 records (bucket size = 4). Compute the following values:
- The packing density.
  - The expected number of addresses with no records assigned to them by hash function.
  - The expected number of addresses with exactly one record assigned.
  - The expected number of addresses with one record plus one or more synonyms.
  - The expected number of overflow records assuming that only 4 records can be assigned to each home address. (10 Marks)
- b. Explain the different collision resolution techniques. (10 Marks)
- 8 a. Explain how extendible hashing works. (10 Marks)
- b. Write short notes on:
- Dynamic hashing.
  - Storage fragmentation. (10 Marks)

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