IS5T4

Reg. No. | | | | | | | | | | |

Fifth Semester B.E. Degree Examination, January / February 2003

Information Science and Engineering

File Structures

Time: 3 hrs.] [Max.Marks : 100

Note: ***Answer any FIVE full questions.***
All questions carry equal marks.

1. (a) Explain briefly the evolution of file structure design. **(6 Marks)**
   (b) What is seeking and how is it supported in C streams and in C^{++} streams. **(6 Marks)**
   (c) List and explain the strengths and weeknesses of $CD-ROM$. **(8 Marks)**

2. (a) Explain the organization of data on Tapes with neat diagram. With an examples estimate tape length requirements. **(10 Marks)**
   (b) Explain the most common methods of adding structures to files to maintain the identity of fields. **(10 Marks)**

3. (a) Explain key sort with an algorithm and example. **(12 Marks)**
   (b) With suitable examples, describe the inverted list and discuss its advantages. **(8 Marks)**

4. (a) Explain how cosequential processing is implemented in general ledger program. **(10 Marks)**
   (b) Explain Heap sort with class definition, functions - Insert and Remove, with an example. **(10 Marks)**

5. (a) Explain the Balanced Four - Tape merge of ten runs with an example. **(10 Marks)**
   (b) What is multi level indexing. WIth an example, explain the creation of B - Trees. **(10 Marks)**

6. (a) With reference to B-Trees, explain the following.
   i) Worst case search depth ii) Deletion and merging. **(10 Marks)**
   (b) Explain how B^+ tree file structures is used in Index - sequential file organization. **(10 Marks)**

7. (a) Explain the structure of index sequential file. How is indexing done for a index sequential file with an example? **(10 Marks)**
   (b) Explain with suitable examples, the collision resolution techniques of double hashing. **(10 Marks)**

8. Write short notes on:
   a) Sorting and cosequential processing in UNIX
   b) Buffer class Hierarchy
   c) Record Structures
   d) Disk Organisation **(5×4=20 Marks)**

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IS5T4

USN | | | | | | | | | | |

Fifth Semester B.E. Degree Examination, July/August 2004

Information Science and Engineering

File Structures

Time: 3 hrs.] [Max.Marks : 100

Note: ***Answer any FIVE full questions.***

1. (a) Describe the fundamental file operations in detail. (6 Marks)

   (b) Explain how data on the magnetic disk is organised with relevant sketches. (10 Marks)

   (c) What are the advantages and disadvantages of CD rom? (4 Marks)

2. (a) Discuss different methods of field and record organization and accessing methods. (12 Marks)

   (b) Explain the different UNIX tools for the sequential processing of files. (8 Marks)

3. (a) Explain keysorting method with relevant examples. Mention the limitations of key sort method. (10 Marks)

   (b) What do you mean by an index? How do we improve secondary index structure by using inverted lists. (10 Marks)

4. (a) What is consequential processing. Give assumptions for the same and essential components of the model. (10 Marks)

   (b) Explain with an example the K-way merge. (10 Marks)

5. (a) What are B-trees? Give formal definition of B-tree properties. Calculate worst-case-search depth with steps and explanation. (10 Marks)

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

6. (a) What is indexed sequential access? How do we add simple index to a sequence set? (10 Marks)

   (b) Explain the internal structure of index set blocks. (10 Marks)

7. (a) Explain the different collisio resolution techniques. (10 Marks)

   (b) Explain, how extendible hashing works. (10 Marks)

8. Write short notes on :

   a) Dynamic hashing

   b) The balanced merge.

   c) Magnetic tapes

   d) Binary search Vs linear search. (5×4=20 Marks)

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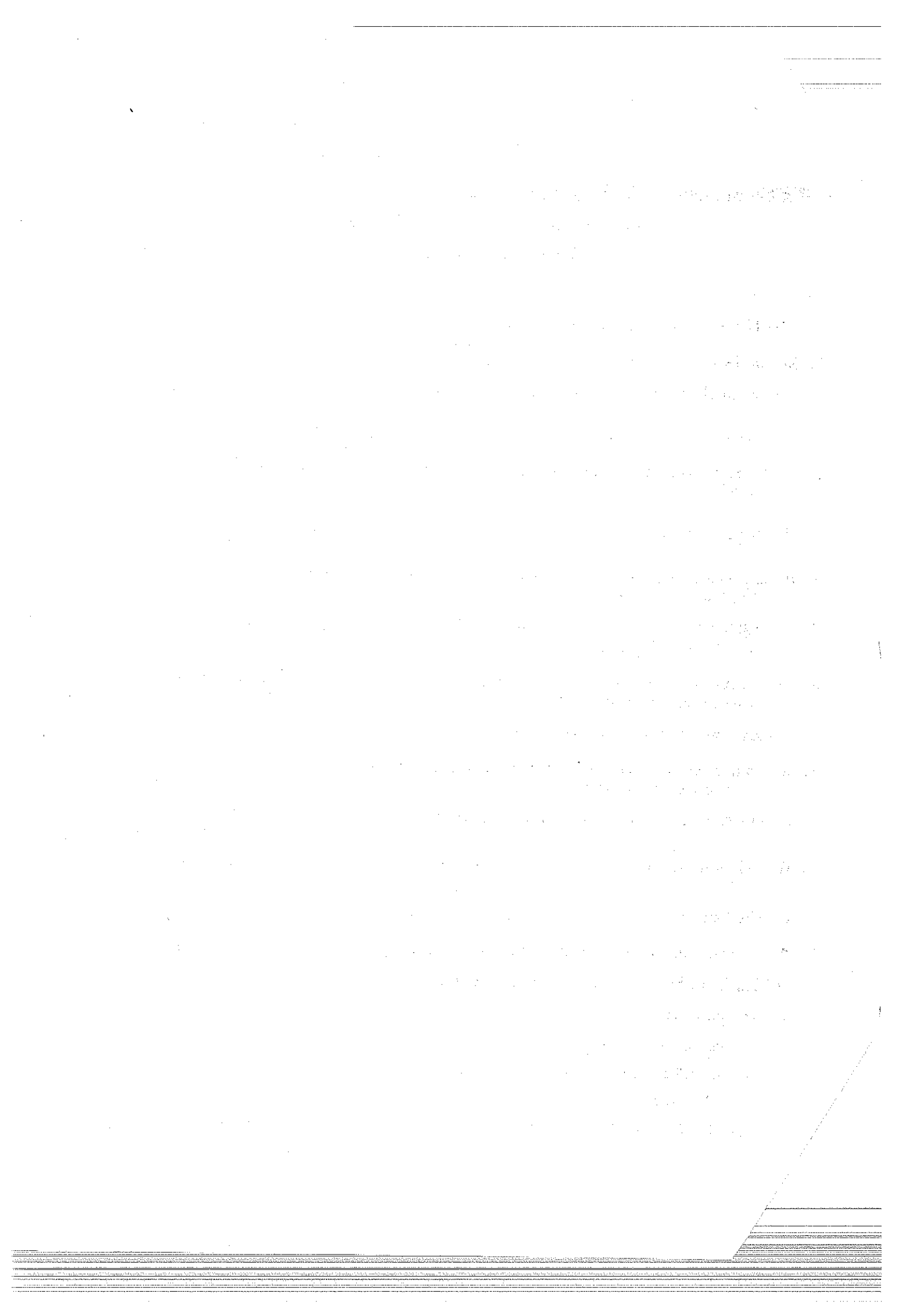

IS56

NEW SCHEME

USN | | | | | | | | | | |

Fifth Semester B.E. Degree Examination, January/February 2005

Information Science and Engineering

File Structures

Time: 3 hrs.] [Max.Marks : 100

Note: ***Answer any FIVE full questions.***

1. (a) What are the basic file processing operations? Explain each one of them. (10 Marks)
   (b) Explain the physical and logical file in unix. (6 Marks)
   (c) What is seeking and how is it supported in C streams and in $C++$ streams? (4 Marks)

2. (a) What are the different ways of adding structures to files to maintain the identity of fields? Explain each with example. (10 Marks)
   (b) Calculate the space required on the tape, if we want to store the 1 million 100-byte records on a 6250 bpi tape that has an interblock gap of 0.3 inches. Increase the blocking factor from 1 to 50 and hence calculate the space required. (10 Marks)

3. (a) With an algorithm, explain keysorting technique and its limitation. (10 Marks)
   (b) What do you mean by an index? With an example explain simple index for sequential files. (10 Marks)

4. (a) What are the difficulties associated with secondary index structures? Explain any two solutions with illustrations. (10 Marks)
   (b) Explain how consequential processing is implemented in general ledger programs. (10 Marks)

5. (a) What is multilevel indexing? Explain with an example, the creation of B-trees. (10 Marks)
   (b) Write reference to B-tree, explain the following : (10 Marks)
   i) Worst case search ii) Deletion and merging.

6. (a) Explain simple prefix B-tree and its maintenance. (10 Marks)
   (b) Compare B-trees, B+ trees and simple prefix B+ trees. (10 Marks)

7. (a) What do you mean by collision resolution? Discuss different collision resolution. (10 Marks)
   (b) Explain, how extendible hashing works. (10 Marks)

8. Write short notes on : (5×4=20 Marks)
   i) Run-length encoding
   ii) Storage fragmentation
   iii) Virtual B trees
   iv) Buffer management.

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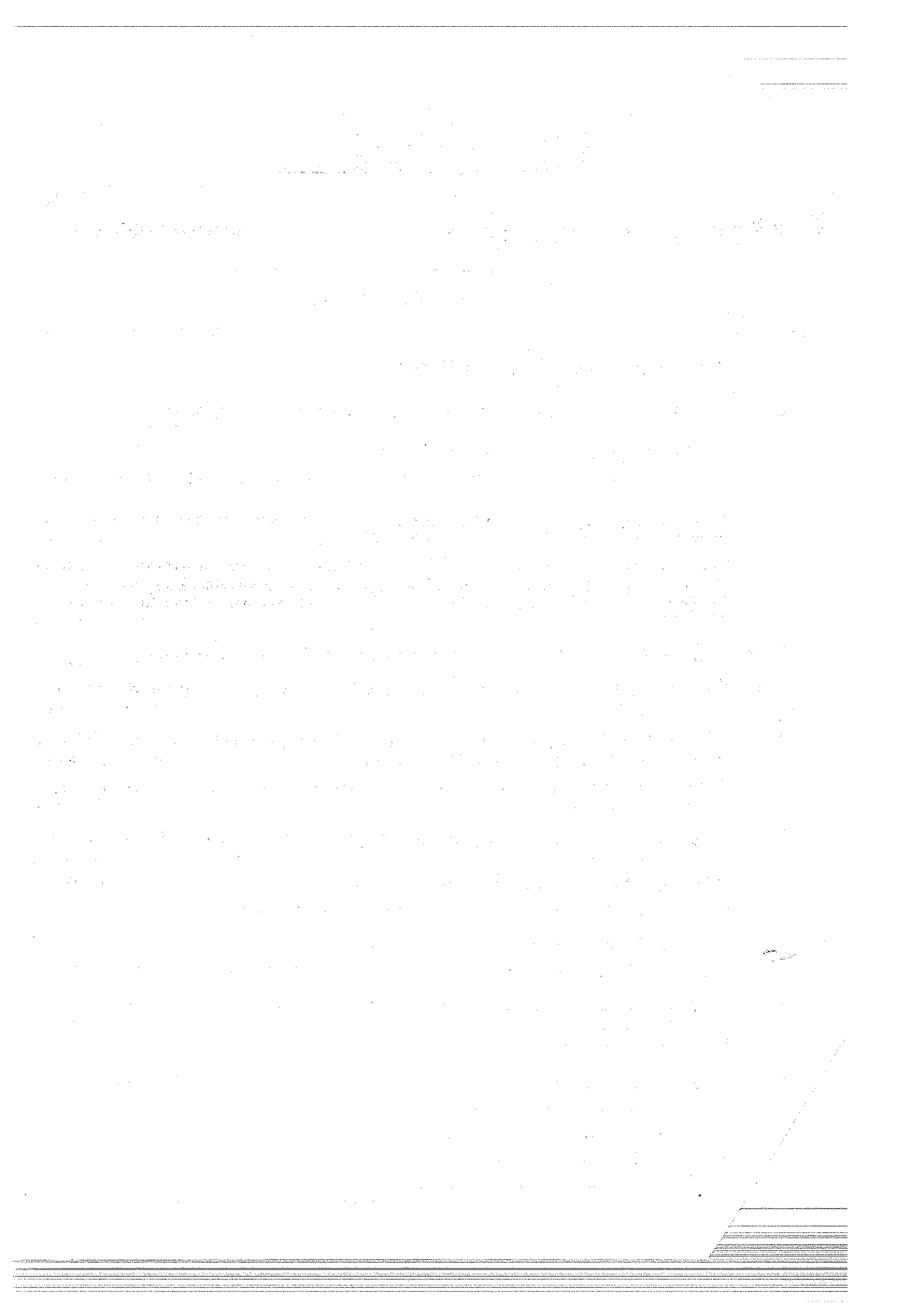

IS56

NEW SCHEME

USN | | | | | | | | | | |

Fifth Semester B.E. Degree Examination, July/August 2005

Information Science and Engineering

File Structures

Time: 3 hrs.] [Max.Marks : 100

Note: ***Answer any FIVE full questions.***
C++ procedures/methods should be accompanied with sufficient explanations.

1. (a) What are the three distinct operations that contribute to the total cost of access on a disc? (6 Marks)

   (b) How is data physically stored on a CDROM? List the major strengths and weaknesses of CDROMS? (14 Marks)

2. (a) What is a record? What are the ways in which records can be organised on a file? (12 Marks)

   (b) Explain the following concepts briefly :
   i) Self describing files ii) Metadata. (8 Marks)

3. (a) Suggest and explain a C++ program for key sorting. (10 Marks)

   (b) What is the need for multiple key indexing? Explain how records can be added to and deleted from an index system with multiple keys? (10 Marks)

4. (a) Suggest and explain a C++ procedure to merge two lists. (10 Marks)

   (b) Explain how merging can be used to sort large files on a disk. (10 Marks)

5. (a) Give a formal definition of the properties of a B-tree of order m. (5 Marks)

   (b) Suggest methods to :
   i) Search a B-tree and ii) Insert into a B-tree. (15 Marks)

6. (a) Explain the organisation of an indexed sequential file, indicating how insertions and deletions are handled. (10 Marks)

   (b) Define a simplex prefix C^+ tree. Explain the issues involved in maintenance of such trees. (10 Marks)

7. (a) What is hashing? Explain any five methods of hashing. What is the major drawback of hashing? (12 Marks)

   (b) Why is deleting a record from a hashed file cumbersome? Explain the concept of tombstones in this context. (8 Marks)

8. (a) What is a trie? Explain how a trie can be converted to work as a directory. How does it handle overflows? (10 Marks)

   (b) Suggest C++ methods to :
   i) insert ii) search iii) find on directories.
   The insert class should be able to handle over flows. (10 Marks)

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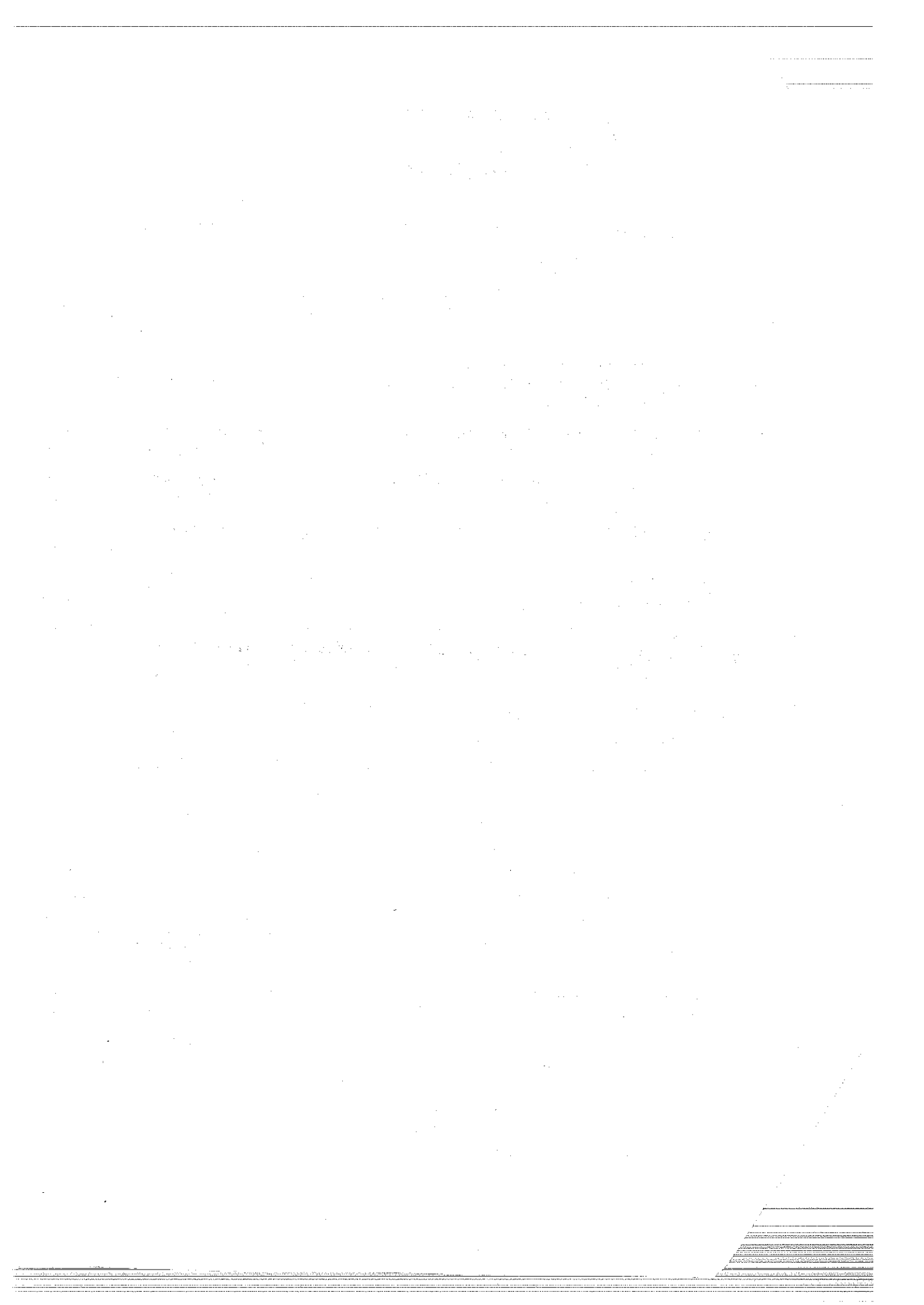

IS56

NEW SCHEME

Reg. No.

Fifth Semester B.E. Degree Examination, January/February 2006

Information Science and Engineering

File Structures

Time: 3 hrs.) (Max.Marks : 100

Note: ***Answer any FIVE full questions.***

1. **(a)** Explain the following :
   i) Physical file
   ii) Opening file
   iii) Logical file
   iv) Reading and writing file **(8 Marks)**

   (b) Explain briefly the evolution of file structure. **(6 Marks)**

   (c) What are streams ? Explain seeking with C^{++} stream classes in detail. **(6 Marks)**

2. **(a)** Explain how data on the magnetic disk is organised with relevant sketches. **(10 Marks)**

   (b) Discuss the common methods of adding structures to files to maintain the identity of fields. **(10 Marks)**

3. **(a)** Write an explanatory note on buffer management. Explain its importance. **(10 Marks)**

   (b) What do you mean by an index ? Explain simple index for sequential file. **(10 Marks)**

4. **(a)** Explain how cosequential processing is implemented in general ledger program. **(10 Marks)**

   (b) Explain heapsort with class definition function, insert and remove with an example. **(10 Marks)**

5. **(a)** What is multilevel indexing ? With an example explain the creation of B - trees. **(10 Marks)**

   (b) What are B - trees ? Give formal definition of B - tree properties. Calculate worst - case- search depth with steps and explanation. **(10 Marks)**

6. **(a)** Explain how B^{+} tree file structure is used in index - sequential file organization. **(10 Marks)**

   (b) Explain the internal structure of index set blocks. **(10 Marks)**

7. **(a)** What is hashing ? Explain a simple hashing algorithm. **(10 Marks)**

   (b) Explain the various collision resolution techniques. **(10 Marks)**

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8. Write short notes on :

(a) Record organisation

(b) Magnetic tapes

(c) Virtual B - trees

(d) Storage fragmentation

(4×5=20 Marks)

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