CBCS SCHEME

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

18IS61

Sixth Semester B.E. Degree Examination, Dec.2024/Jan.2025
File Structures

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Explain the functions OPEN, READ, WRITE, SEEK with parameters. **(08 Marks)**

b. Explain the sector based data organization in magnetic disk with a neat diagram. **(08 Marks)**

c. Explain the concept of inheritance using the IP buffer class hierarchy. **(04 Marks)**

OR

2 a. Define field and record. Explain the different methods for organizing fields and records of a file, with examples. **(12 Marks)**

b. Define: i) RRN ii) Physical file iii) Logical file iv) File access and file organization. **(08 Marks)**

Module-2

3 a. Describe the operations required to maintain an indexed file. **(08 Marks)**

b. Build the Huffman tree and code the input symbols for the following input sequence cddaf.

Symbol	a	b	c	d	e	f
Probability	0.1	0.4	0.06	0.1	0.04	0.3

(08 Marks)

c. Explain the limitations of binary searching and internal sorting. **(04 Marks)**

OR

4 a. Explain the different way of reclaiming space in files. **(10 Marks)**

b. Discuss the limitations of retrieving the records using combination of secondary key. Explain the solution by using linking list of reference techniques. **(10 Marks)**

Module-3

5 a. Write an algorithm for heap sorting method. Show the construction of heap tree for following incoming sequence FDCGHIBEA. **(10 Marks)**

b. What is co-sequential processing and what are the assumptions and components of the model? **(10 Marks)**

OR

6 a. What is multilevel indexing? Explain the concept of B-Trees in multilevel indexing. Construct a B-tree for the sequence (order 4) Q, P, A, E, C, X, Z, D, H, I, F. **(10 Marks)**

b. With examples explain the following operations in a B-tree:
i) Deletion ii) Merging iii) Redistribution. **(10 Marks)**

Module-4

7 a. Give the structure of indexed sequential access with a neat diagram. Discuss simple prefix B+ tree maintenance. **(10 Marks)**

b. Compare : B trees, B+ trees, Simple prefix, B+ trees. **(10 Marks)**

OR

8 a. Explain a B tree and its creation with example. **(10 Marks)**

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

Module-5

9 a. Discuss any 3 methods used to avoid collision in hashing. **(10 Marks)**

b. Suppose that 10000 addresses are allocated to hold 8000 records in a randomly hashed file and that each address can held one record compute the following values.

i) The packing density

ii) The expected number of address with no records assigned.

iii) The expected number of address with one record assigned.

iv) Expected number of overflow records. **(10 Marks)**

OR

10 a. Explain :

i) Dynamic Hashing

ii) Linear Hashing

iii) Extendible Hashing. **(12 Marks)**

b. Explain the working of extendible hashing. **(08 Marks)**

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