

**III Semester M.C.A. Examination, March/April 2021
(CBCS Scheme)
COMPUTER SCIENCE
MCA 301 : File Structures**

Time : 3 Hours

Max. Marks : 70

Instruction : Answer any five questions from Part – A and answer any four questions from Part – B.

PART – A

I. Answer **any five** questions. **Each** carries **6** marks. **(5×6=30)**

- 1) What are the different file processing operations ? Explain with general format and example.
- 2) What are the various file organization methods ? Discuss.
- 3) Explain the file operation and directory operation UNIX commands with examples.
- 4) What is multilevel indexing ? Discuss the advantages and disadvantages of multilevel indexing.
- 5) In the following table, given a text file with following characters and corresponding frequencies, discuss the mechanism to compress the text file.

Character	A	H	I	U	O	M
Frequency	0.10	0.15	0.20	0.30	0.10	0.15

- 6) Given a B+ Tree of order 3, insert the following number.
{4, 3, 6, 8, 5, 1, 0, 9, 2, 11, 18}
- 7) Discuss internal sorting and binary searching.
- 8) Explain Key-sorting with an algorithm and an example.



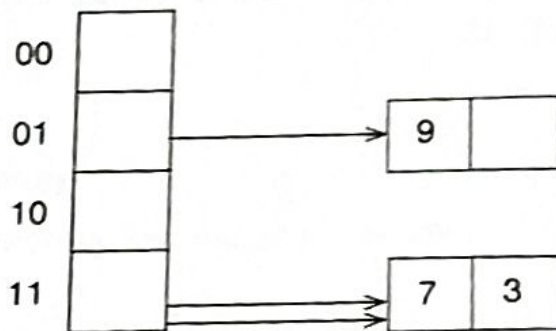
II. Answer **any four** questions. **Each** carries 10 marks.

(4×10=40)

9) What is extendible hashing ? Demonstrate the same on following set of Keys :

9, 7, 3, 5, 0, 8, 4, 1, 6, 2

Bucket size is 2. First three elements are hashed as below.



10) Given a 2 – 3 tree (B-Tree of order 3) Build B-Tree for the following inputs. (Show the tree at each insertion).

12, 5, 7, 13, 20, 9, 5, 60, 16 15 Delete 20, 60, 16, 15 and redraw the tree.

11) Write an algorithm for K-way merge sort algorithm. Trace the K-way merge sort algorithm for the given set of numbers : (K = 2).

5, 8, 3, 7, 9, 10, 6, 2, 17.

12) Define B-Tree, B+Tree and B* Tree. How are they different ? What are the advantages and disadvantages of them ?

13) a) Discuss methods of manipulating Buffers using Class.

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b) Discuss model for implementing consequential processes.

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14) Explain how to encapsulate a record related operations into a single class.
