



**III Semester M.C.A. Examination, January 2017**  
**(CBCS Scheme)**  
**COMPUTER SCIENCE**  
**MCA 301 : File Structures**

Time : 3 Hours

Max. Marks : 70

**PART – A**

- I. Answer **any five** questions. **Each** carries **six** marks. **(5×6=30)**
- 1) What are file OPEN, READ and CLOSE operations ? What is the effect on memory when these operations are performed ?
  - 2) Discuss UNIX file system commands for operations on files.
  - 3) What are the various file organization methods ? Compare sequential file organization and indexed file organization methods.
  - 4) What are the various collision control mechanisms used for hashing ?
  - 5) Discuss differences between B-Tree, B<sup>+</sup> Tree and B\*-Tree.
  - 6) What is k-way merging ? Explain k-way merging with suitable examples.
  - 7) How does one encapsulate record operation in a single class ?
  - 8) Discuss methods for data compression with their advantages.

**PART – B**

- II. Answer **any four** questions. **Each** carries **ten** marks. **(4×10=40)**
- 9) Write a program to copy contents of one text file to another text file. Discuss the effect of OPEN, READ and close on the memory management.
  - 10) Define B-Tree. Assuming a B-Tree of order 3, with leaf node has the capacity to hold 2 elements, construct B-Tree for the following input elements :  
15, 4, 6, 9, 1, 3, 8, 0, 18, 11, 93, 88.
  - 11) Assume that 1000 crore Indians have Adhaar number and the records are stored using hashing technique. Given the hashing function  $h(k) = k \text{ mod } 100$  and chaining as collision control mechanism, discuss advantages, disadvantages of the method.
  - 12) Given the following input, sort the numbers using 2-way merge sort :  
14, 6, 1, 0, 9, 3, 14, 4, 2, 5, 7.

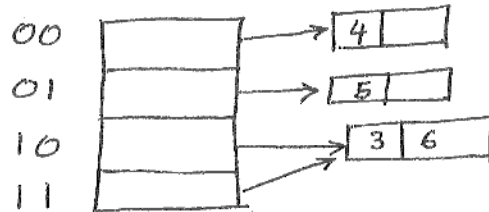
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13) What is extendable hashing ? What are the advantages of extendible hashing ?  
 Assume the following key elements for hashing.

3, 6, 5, 4, 1, 8, 14, 9, 0, 2, 7

using bucket size as 2, elements 3, 6, 5, 4 are hashed in the following manner  
 hash other elements using extendible hashing.



14) Discuss hard disk and compact disk as an efficient storage mechanism to handle files.

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