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13MCA352

**Third Semester MCA Degree Examination, Dec.2017/Jan.2018**  
**Advanced Topics in DBMS**

Time: 3 hrs.

Max. Marks:100

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

- 1 a. What is an index? Why is it used? Explain three main alternatives are available for the data entries in an index. (08 Marks)  
b. What is RAID system? Explain different level of Redundancy. (12 Marks)
- 2 a. What is Transaction? Explain ACID properties of a transaction. (08 Marks)  
b. What is recovery? Explain ARIES recovery algorithms. (06 Marks)  
c. Explain two-phase locking techniques for concurrency control and concurrency control based on time stamp ordering. (06 Marks)
- 3 a. Describe how search, insert and delete operations works in ISAM indexes with example. (10 Marks)  
b. What is B+ tree? Describe the B+ tree search algorithm with example. (05 Marks)  
c. Explain key compression and bulk loading a B+ tree with example. (05 Marks)
- 4 a. Explain extendible hashing with example. (10 Marks)  
b. Explain linear hashing with example. (06 Marks)  
c. What is static hashing? Explain with example. (04 Marks)
- 5 a. Explain algorithms for relational operations with example. (10 Marks)  
b. How does external merge sort work? Explain with example. (10 Marks)
- 6 a. Explain selection and projection operation with example. (10 Marks)  
b. Explain join and set operations with example. (10 Marks)
- 7 a. Explain relational algebra equivalences with example. (10 Marks)  
b. Explain nested subqueries with example. (10 Marks)
- 8 Briefly explain the following with example:  
a. DBMS benchmarking  
b. Mobile databases  
c. Multimedia databases  
d. Genome data management. (20 Marks)

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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.