Third Semester MCA Degree Examination, Dec.2016/Jan.2017
Advanced Topics in DBMS

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Explain the different file organization and discuss each with respects to storage and scanning perspective. **(10 Marks)**
   b. Explain RAID concept and discuss the tradeoffs between reliability and performance in different RAID organizations. **(10 Marks)**

2 a. Discuss the desirable properties of a transaction. **(04 Marks)**
   b. Discuss the problems occurring during concurrent transaction. **(09 Marks)**
   c. Explain the two phase locking protocol and the stricter version of it. **(07 Marks)**

3 a. Define schedule. Discuss the schedules based on serializability with examples. **(10 Marks)**
   b. Describe in brief the steps to insert into B+ tree and construct B+ tree for the following data (degree of tree = 4) 7, 5, 11, 27, 31, 01, 04, 09, 21, 26. **(10 Marks)**

4 a. Give the structure of ISAM and discuss briefly. **(08 Marks)**
   b. Explain and compare the two dynamic hashing techniques. **(12 Marks)**

5 a. What is the goal of Query optimization? Taking an example query explain a relational query evolution plan. **(10 Marks)**
   b. Explain the working of external merge sort algorithm. **(10 Marks)**

6 a. With a neat block diagram, explain projection based on hashing. **(10 Marks)**
   b. Discuss the sort merge join algorithm. **(10 Marks)**

7 a. What are histograms? Explain the different kinds of histograms. **(06 Marks)**
   b. Discuss the equivalences among relational algebra expression and how does it help in query optimization. **(08 Marks)**
   c. Discuss the design choices made in system R optimizer. **(06 Marks)**

8 a. Explain the decision made during physical database design and Turing **(05 Marks)**
   b. Explain any two DBMS benchmarks. **(05 Marks)**
   c. Illustrate the general architecture of a mobile platform and discuss its characteristics. **(10 Marks)**

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