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13MCA352

Third Semester MCA Degree Examination, June/July 2016

Advanced Topics in DBMS

Time: 3 hrs. Max. Marks:100

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

1 a. Define data entry. List out the three main alternatives to store data entry as an index. **(05 Marks)**

b. Differentiate between clustered and unclustered index. **(05 Marks)**

c. Explain the trade-offs between reliability and performance in different RAID organizations. **(10 Marks)**

2 a. Discuss the desirable properties of a transaction. **(04 Marks)**

b. With examples, demonstrate the anomalies due to interleaved execution of transactions. **(08 Marks)**

c. Explain Timestamps and show the working of any two deadlock prevention protocols using timestamp on transactions. **(08 Marks)**

3 a. Define ISAM. Explain its structure and analyze it with B+ tree. **(10 Marks)**

b. Construct a B+ tree of degree 3 for the following data:
45, 39, 97, 92, 56, 63
and show the steps when 39, 63 and 56 are deleted from the above constructed tree. **(10 Marks)**

4 a. Differentiate between static and linear hashing with example. **(10 Marks)**

b. Show with an example how extendible hashing uses directory of buckers. Under what conditions does the directory get large? **(10 Marks)**

5 a. What is meta data? What meta data is stored in system catalog? **(05 Marks)**

b. Discuss the three commonly used techniques used in algorithms to evaluate relational operators. **(05 Marks)**

c. Give the alternative plans for the query below and discuss which is the best plan:
SELECT S.name FROM Reserves R, Sailors S WHERE R.sid = S.sid AND R.bid = 100 AND S.rating 75. **(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. Define the term reduction factor. What are the two parts to estimate the cost of a query plan? **(06 Marks)**

b. What are histograms? Explain the different kinds of histograms. **(06 Marks)**

c. When are two relational algebra expressions considered equivalent? Explain important equivalences involved in selection and joins. **(08 Marks)**

8 a. Explain the decisions made during physical database design and turning. **(05 Marks)**

b. Explain any two DBMS Benchmarks. **(05 Marks)**

c. Illustrate the general architecture of a mobile platform and discuss its architecture and characteristics. **(10 Marks)**

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