USN | | | | | | | | | | |

13MCA352

Third Semester MCA Degree Examination, June/July 2017
Advanced Topics in DBMS

Time: 3 hrs. Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Define index. Discuss three alternatives of what to store as data entry in an index. **(04 Marks)**
b. Briefly explain hash based indexing using an example. **(06 Marks)**
c. What is redundancy in RAID? Explain different levels of redundancy. **(10 Marks)**

2 a. What is transaction? Discuss the desirable properties of transaction. **(06 Marks)**
b. Define binary lock. Briefly explain the rules to be followed by transaction in binary locking scheme. **(06 Marks)**
c. Discuss shadow paging using an example. **(08 Marks)**

3 a. With a neat diagram, explain ISAM index structure. **(06 Marks)**
b. Briefly explain the main characteristics of B+ tree. **(06 Marks)**
c. Write and explain the pseudocode of the SEARCH algorithm. **(08 Marks)**

4 a. Explain static hashing with a neat diagram. **(06 Marks)**
b. Explain insertion of record in linear hashing using an example. **(08 Marks)**
c. Write a note on extendible hashing. **(06 Marks)**

5 a. What is system catalog? Briefly explain the information stored in catalog. **(06 Marks)**
b. What is query optimization? Construct relation algebra tree and query evaluation plan for the following query. "Select S.sname from reserve R, sailors S where R.Sid = S.sid and R.bid = 100 and S.rating > 5". **(06 Marks)**
c. Briefly explain simple two way merge sort algorithm. **(08 Marks)**

6 a. Explain evaluation of projection operation based on sorting. **(06 Marks)**
b. Write and explain the importance of nested loop Join algorithm. **(08 Marks)**
c. Write a note on impact of buffering. **(06 Marks)**

7 a. List out and explain the steps involved in translating SQL queries into algebra. **(08 Marks)**
b. Explain relational algebra equivalence for selection, projection, Cartesian product and JOINS. **(06 Marks)**
c. Discuss different types of choices in tuning the conceptual schema. **(06 Marks)**

8 a. Explain different guidelines to be followed for index selection. **(10 Marks)**
b. Explain any six characteristics of GIS. **(06 Marks)**
c. Write a note on multimedia databases. **(04 Marks)**

* * * * *