Code No: NR411004 **NR**

IV B.Tech I Semester Supplementary Examinations, November 2005
DATA BASE MANAGEMENT SYSTEMS
(Common to Electronics & Instrumentation Engineering and Electronics & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Consider the following schema
Suppliers(sid, sname, saddress)
Parts(pid, pname, color)
Catalog(sid, pid, cost)
The key fields are underlined. Write the following queries in relational algebra
   i. Find the names of suppliers who supply blue part
   ii. Find the sids of suppliers who supply every red part
   iii. Find the pids of parts that are supplied by at least two different suppliers
   iv. Find all the pids of parts supplied by supplier with sid=200
   v. Find the pids of parts supplied by every supplier at less than Rs 500. [2+2+2+2+2]

   (b) Given two relations R1 and R2 , where R1 contains N1 tuples, R2 contains N2 tuples, and N2 > N1 > 0 , give the minimum and maximum possible sizes (in tuples) for the result relation produced by each of the following relational algebra expressions. In each case, state any assumptions about the schemas for R1 and R2 that are needed to make the expression meaningful.
   i. Selecting all the tuples from R1 where a=5
   ii. Projecting the attribute b from R2
   iii. R1 X R2 [2+2+2]

2. (a) Explain the three set-manipulation constructs available in SQL with examples.
   (b) What is a subquery? Explain with examples. [9+7]

3. Discuss the difference between index sequential and hashed file organizations. Compare their storage and access efficiencies. List the applications where each of the file organization is suitable. [16]

4. (a) Discuss about cost based optimization.
   (b) Give a detailed account of heuristic optimization. [8+8]

5. (a) Write short notes on
   - cost-based optimization
   - heuristic optimization
   (b) Detail on the structure of query optimization [5+5+6]

6. (a) Design a generalization-specialization hierarchy for a motor-vehicle sales company. The company sells motor-cycles, passenger cars, vans and busses. Justify your placement of attributes at each level of hierarchy. Explain why they (attributes) should not be placed at higher or lower level? Convert the E-R diagram so made to 3NF relational scheme.

   (b) Normalize the relation R(A,B,C,D,E,F,G,H) into the third normal form using the following set of FDs:
   AB− > C
   BC− > D
   CDE− > ABH
   BH− > A
   D− > EF
   Is the decomposition dependency preserving? [8+8]

7. (a) Discuss about deadlock detection and starvation

   (b) Explain read-only and write-only protocols and read-before-write protocol in Serializability. [8+8]

8. (a) Describe how fuzzy check points are used in ARIES.

   (b) What are the log sequence numbers in ARIES?

   (c) Discuss WAL protocol [6+4+6]

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