

IV B.Tech I Semester Supplementary Examinations, April/May 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

1. (a) Consider the following schema. The primary keys are underlined.
 Sailors(sailor-id, sailor-rating, sailor-age)
 Boats(boat-id, boat-name, boat-color)
 Reserves(sailor-id, boat-id, day)
 Write the queries in Relational algebra
 (b) Which of the following is procedural
 - i. Relational algebra
 - ii. Relational calculus
 Justify your answer with an example.
2. (a) What is a view? Explain the a views in SQL?
 (b) Explain nested queries with example in SQL ?
3. Consider the two internal organizations for heap files (using lists of pages and a directory of pages).
 - (a) Describe them briefly and explain the trade-offs. Which organization would you choose if records are variable in length.
 - (b) Can you suggest a single page format to implement both internal file organizations?
4. (a) Explain about projection based on sorting.
 (b) Explain about projection based on hashing.
5. Show that the following equivalences hold and explain how they can be applied to improve the efficiency of certain updates.
 - (a) $\sigma_p(r1 \cup r2) = \sigma_p(r1) \cup \sigma_p(r2)$
 - (b) $\sigma_p(r1 - r2) = \sigma_p(r1) - \sigma_p(r2)$
6. (a) Explain functional dependencies and multivalued dependencies with examples.
 (b) Consider the relation R(A,B,C,D,E,F) and FDs

A \rightarrow BC F \rightarrow A
 C \rightarrow A

$D \rightarrow E \ E \rightarrow D$

is the decomposition of R into $R_1 (A,C,D)$, $R_2 (B,C,D)$ and $R_3 (E,F,D)$ loss less? Explain the requirement of loss less decomposition.

7. (a) What information does the dirty page table and transaction table contain?
(b) Give a short notes on recovery from deadlock.
8. Write short notes on
 - (a) Check-pointing
 - (b) Media recovery

★ ★ ★ ★ ★