**UNIT I**

• **Decomposition:** Functional dependency, Closure of a

set of functional dependency, Lossless‐Join

decomposition, Multi valued dependency and fourth

normal form, Join dependency, Fifth normal form.

– Ref: [**Ramakrishnam: 19.1‐19.3, 19.5, 19.8**]

• **Concurrency Control:** Concept of a transaction, ACID

properties, Serial and serializable schedules, Conflict

and View serializabilty, Precedence graphs and test for

conflict seralizability.

– Ref: [**Ramakrishnam: 16.1‐16.3, 17.1]**

**UNIT II**

• **Enforcing serializability by locks:** Concept of locks, the

locking scheduler, Two phase Locking, upgrading and down

grading locks, Concept of dead locks, Concurrency control

by time stamps, The Thomos Write rule.

– **Ref: [Ramakrishnam: 16.4, 17.1, 17.3, 17.4, 17.6]**

• **Crash Recovery:** ARIES algorithm. The log based

recovery, recovery related structures like transaction

and dirty page table, Write‐ahead log protocol, check

points, recovery froma system crash, Redo and Undo

phases.

– **Ref: [Ramakrishnam: 18.1‐18.6]**

**UNIT III**

• **Fundamentals of PL/SQL:** Defining variables and constants,

PL/SQL expressions and comparisons: Logical Operators,

Boolean Expressions, CASE Expressions Handling, Null

Values in Comparisons and Conditional Statements, PL/SQL

Datatypes: Number Types, Character Types, Boolean Type,

Datetime and Interval Types.

– **Ref: [Ivan Bayross: Chap 15]**

• **Overview of PL/SQL Control Structures:** Conditional

Control: IF and CASE Statements, IF‐THEN Statement, IFTHEN‐

ELSE Statement, IFTHEN‐ ELSIF Statement, CASE

Statement, Iterative Control: LOOP and EXIT Statements,

WHILE‐LOOP, FOR‐LOOP, Sequential Control: GOTO and

NULL Statements, Concept of nested tables.

– **Ref: [Ivan Bayross: Chap 15]**

**UNIT IV**

• **Sequences:** creating sequences, referencing, altering and dropping a

sequence.

– **Ref: [Ivan Bayross: Chap 11]**

• **Query evaluation:** System Catalog, Evaluation of relational operators

like selection, projection, join and set, introduction to query

optimization.

– **Ref: [Ramakrishnam: 12.1‐12.4]**

• **Cursors:** Concept of a cursor, types of cursors: implicit cursors;

explicit cursor, Cursor for loops, Cursor variables, parameterized

cursors,

– **Ref: [Ivan Bayross: Chap 16]**

• **Transactions in SQL:** Defining a transaction, Making Changes

Permanent with COMMIT, Undoing Changes with ROLLBACK, Undoing

Partial Changes with SAVEPOINT and ROLLBACK, Defining read only

transactions, explicit locks: transaction and system level, Choosing a

Locking Strategy: ROWSHARE and ROWEXCLUSIVE Mode.

– **Ref: [Ivan Bayross: Chap 16,17]**