B. Tech.

(SEM. VIII) EXAMINATION, 2006-07

(Computer Sc. & Engg.)

ADVANCED CONCEPTS IN DATABASE SYSTEMS

Time : 3 Hours] [Total Marks : 100

Note : (1) Attempt all the questions, choices are within each question. (2) All questions carry equal marks.

1 Attempt any two of the following:

a. (i) How does the concept of an object oriented model differ from the concept of an entity in the E-R Model? Explain in detail, (ii) What do you mean by fragmentation? What do you understand by Horizontal, vertical and mixed fragmentations?

b. Explain logic based data model in detail.

c. Discuss the advantages and disadvantages of distributed database.

2 Attempt any two:

a. Discuss parallel and pipeline join with the help of example.

b. Discuss the spatial and multimedia database in detail.
c. Consider the relations \( r^\wedge (A, B, C) \), \( r_2 (C, D, E) \) and \( r_3 (E, F) \) with primary key A, C, E respectively. Assume that \( r^\wedge \) has 1000 tuples, \( r_2 \) has 1500 tuples and \( r_3 \) has 750 tuples. Estimate the size of \( r^\wedge \times r_2 \times r_3 \) and give an efficient strategies for computing the join operation.

Attempt any two:

a. Discuss the role of DBA in distributed database system.

b. Discuss commit protocols. Also, explain three phase commit protocol in detail.

c. What do you mean by Query processing? Discuss the various transformation rules of query processing.

Attempt any two:

a. Why is query expressed in relational algebra preferred over query expressed in SQL. Explain this by taking a suitable example.

b. Write a short note on estimation of query processing cost.

c. Discuss the system catalogue in RDBMS.

Write short notes on any two of the following:

a. Expert and web database

b. Temporal and deductive database

c. Object identity and containment

d. Distributed deadlock and recovery.