MCSE/MCIT/MCTA–204(A)

M. Tech. (Second Semester)
EXAMINATION, August, 2008
(Common for CS, IT, CTA & SS Engg.)

ADVANCED DBMS

(Elective – II)

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 40

Note : Attempt any *five* questions. All questions carry equal marks.

1. (a) Explain 'unified modelling language'. What are the various parts of UML ? Explain with example for a given E-R diagram. Constructs their equivalent UML class diagram constructs.   10

   (b) An E-R diagram can be viewed as a graph. What do the following mean in terms of structure of an enterprise schema ?   10

      (i)   The graph is disconnected.

      (ii) The graph is a cyclic.

2. (a) Given figure shows a lattice structure of generalization and specialization. For entity sets A, B and C, explain how attributes are inherited from higher level entity sets X and Y. Discuss how to handle a case where an attribute of X has same name as attribute of Y ?   10
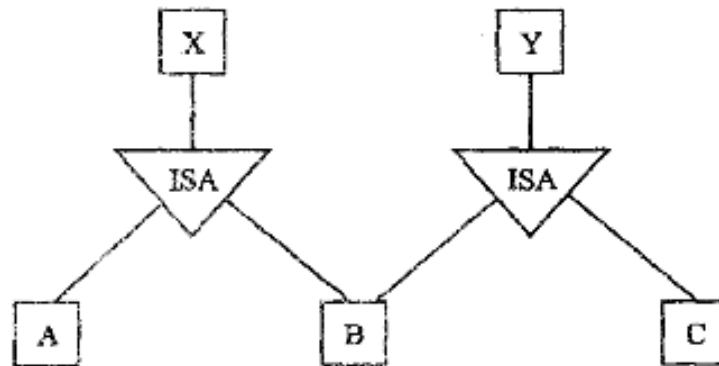
(b) How are type hierarchies, shared subclasses and multiple inheritances represented in EER ? Explain with examples. Also explain specialization/ generalization disjoint, overlapping and participation constraint.   10

. (a) How does the concept of an object in object oriented model differ from   10

   (i) the concept of an entity in entity relational model ?

   (ii) concept of tuple equality in relational model ?

(b) Given a database schema R (a, b, c) and a relation r on the schema R. Write an SQL query to test whether the FD $b \rightarrow c$ holds on relation r. Also write SQL assertion that enforces the FD. Assume no null values are present.   10

. (a) Explain static and dynamic query optimization. Discuss their advantages and disadvantages.   10

(b) Explain query decomposition. Explain the various stages of query decomposition.   10

5. (a) To build a highly available distributed system, you must know what kinds of failure can occur ?   10

   (i) List possible types of failure in a distributed system.

   (ii) Which item in your list is also applicable for centralized system.

(b) Explain the difference between data replication in distributed system and maintenance of a remote backup site. 10

6. (a) Discuss how NULL's are treated in comparison operators in SQL. How are NULL's treated when aggregate functions are applied in SQL querry ? How are NULL's treated if they emits in grouping attributes ? 10

(b) Describe the concept of cursor and how it is used in embedded SQL ? 10

7. (a) What is lossless join property of a decomposition ? Why is it important between the properties of dependency preservation and losslessness ? Which one must definitely be satisfied and why ? 10

(b) What is recursive relationship type ? Give some examples of recursive relationship type. 10

8. Write short notes on any *three* of the following : 20

(i) R tree

(ii) Web databases

(iii) Image databases

(iv) Object relational databases

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