

B.E/ B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2012
COMPUTER SCIENCE & ENGINEERING BRANCH
FIFTH SEMESTER
CS 9024 – ADVANCED DATABASE TECHNOLOGY
(Regulation 2008)

14

Time: 3 hrs

Max. Marks: 100

Answer ALL Questions

Part - A (10 x 2 = 20 marks)

1. List some of the problems of Current Database systems.
2. Changes in organizations and in computers: The impact in Database – Discuss.
3. Mention the key differences between processing global queries in Distributed Database and Centralized Database.
4. How is Data Independence managed in a Distributed Database?
5. What is OID? Mention its significance in OODB?
6. What is the need for persistence in Database?
7. Are Data Marts more preferred in organizations? Justify.
8. What is well formed and valid XML document?
9. Mention the significance of a Deductive database?
10. What is a knowledge base?

Part - B (5 x 16 = 80 marks)

11. Consider a small private airport database that is used to keep track of airplanes, their owners, airport employees and pilots. Some information includes:
- (a) Each airplane has a registration number, is of a particular plane type and is stored in a particular hanger.
 - (b) Each plane type has a model number, a capacity, weight.
 - (c) Each hanger has number, a capacity and a location.
 - (d) Each plane has an owner and the employees who are maintaining the plane.
 - (e) An owner is either a corporation or a person.
 - (f) Each plane undergoes service many times; the database keeps track of service records which includes date of maintenance, number of hours spent on work.
 - (i) Draw an EER diagram and design possible object oriented schema by identifying different classes and methods. (6+10)

(ii) Take two typical queries and write them in Object Query Language. (3+3)

Note: If required some more information can be assumed.

12. (i) Explain the following terms with suitable examples:

(a) Specialization and Generalization (4)

(b) Ternary relation. (4)

(c) Aggregation. (4)

(d) Persistent Programming language. (4)

(or)

(ii) Explain in detail the stages of Query Processing with a specific mention on Query Optimization with an example. (16)

13. (i) How are transactions managed in a distributed database environment? Explain the architecture of Parallel Database. (16)

(or)

(ii) Explain data fragmentation, replication and allocation techniques for Distributed Database Design. (16)

14. (i) Consider the following database for a chain of bookstores:

BOOKS (Booknum, Primary author, Topic, total stock, price)

BOOKSTORE(Storenum, City, State, Zip, Inventory_Value)

STOCK (Storenum, Booknum, Qty)

(a) Discuss how OLAP could be useful for such an organization. (4)

(b) Indicate the star, snowflake schema that could be used for building a data warehouse. (6)

(c) Indicate five typical queries that the warehouse may have to answer (Use SQL) (6)

(or)

(ii) Write short notes on:

a. Mobile Database. (8)

b. Web Database. (8)

15. (i) a. Mention the Query associated with Multimedia Management System. (4)

b. Compare and Contrast the different Multimedia Data Structures with reference to its characteristics. (12)

(or)

(ii) a. Compare Stored Procedures with Triggers. (5)

b. Explain the prototype of a Deductive Database System. (11)