2023
M.E. (Computer Science and Engineering)
First Semester
CS-8102: Advanced Database System
(For UIET Only)

Time allowed: 3 Hours   Max. Marks: 50

NOTE: Attempt _five_ questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I.   Compare the following:-

   a) Give differences in ROLAP, MOLAP and HOLAP.

   b) How SQL3 differs from SQL2.

   c) Explain various types of Parallel Databases.

   d) What is distributed query processing?

   e) Compare Log base recovery and shadow paging.   (5x2)

UNIT - I

II. a) With an example Justify the statement "Multi valued dependencies are consequences of First Normal Form". Also discuss how the multivalued dependencies are eliminated with examples?

   b) Discuss the similarities and dissimilarities between BCNF and 3rd Normal form. Also explain why BCNF is stronger than the 3rd normal form.

   c) Give differences in DTD and XML schema while specifying their syntax and example.   (3,3,4)

III. a) What are UDTS? Give an example.   (2½)

   b) Expand ODMG. When is it necessary?   (2½)

   c) Explain functionality of 2-phase commit and 3-Phase commit protocols for recovery in distributed databases. How both responds to the following failures:
   (i) Failure of participating site (ii) Failure of Coordinator   (5)

IV. You have to design and implement a database for the Hospital Management System. Consider the different types of Patients with respect to Disease and In-Patient and Out-Patient Department in the design. Consider the availability of all well qualified Doctors. Consider various types of tests and operations to be conducted.

   (i)   Design an ODL schema for the above database.

   (ii)   Write 2 OQL operations for the above database.

                                                                        (10)

P.T.O.

UNIT - II

V. a) What is KDD? Explain.

b) Compare, contrast various data mining techniques along with respective application areas.

c) Give detailed architecture of Data warehouse.   (3,3,4)

VI. a) Consider a relation that is fragmented horizontally by plant number. Employee (name, address, salary, plant -number).

Assume that each fragment has two replicas: one stored at the London site and one stored locally at the plant site. Describe a good processing strategy for the following queries entered at the San Jose site.

i) Find the average salary of all employees

ii) Find the highest paid employee at the Toronto site.

b) Explain 2PC, 3PC for DDBMS in brief.   (6,4)

VII. Compare and Contrast the following databases giving advantages and disadvantages of each:

a) Temporal Databases

b) Deductive Databases

c) Spatial Databases

d) Multimedia Databases

e) Mobile Databases

f) Multidimensional Databases   (10)

x-x-x