Sardar Patel Institute of Technology
Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India
(Autonomous College Affiliated to University of Mumbai)
Makeup Examination

~~Nov Dec 2018~~ JAN 2019

Max. Marks: 60 Duration: 3 Hrs
Class: T.E. Semester: V
Course Code: IT53 Branch: Information Technology
Name of the Course: Advanced Database Systems

Synoptic

Q1 a. Compare Data-Partitioning Strategies in Parallel Database.

Ans: Round Robin ,Hash and Range Partitioning 4 differences 4 Marks

b. Write weaknesses of relational data model over NOSQL.
Ans: 4 weakneses 4 marks
c. What is Mobile database? With appropriate example describe data management issues in mobile databases.
Ans: mobile database 1 mark

Data management issues 3 marks
Data management issues as it is applied to mobile databases:

- **Data distribution and replication**
  - **Data is unevenly distributed among the base stations & the mobile units. The consistency constraints compound the problem of cache manager**
- **Transactions models**
  - **A mobile transaction is executed sequentially through several base stations & possibly on multiple data sets depending upon the movement of the mobile unit. traditional ACID properties may have to be modified & new transaction models must be defined**
- **Query processing**
  - **Awareness of where the data is located is important & it affects the cost benefit analysis of query processing**
- **Recovery and fault tolerance**
  - **The mobile database environment must deal with site, media , transaction & communication failures.**

Q2 a. While designing a distributed database systems what should be the layers of query processing? Explain each layer in brief.

Ans: Diagram 2 marks
Explanations 4 marks

OR
Explain each of the following Object Oriented data modelling concepts providing an example of each concept.

i) Object definition language
ii)Object query language.

Ans: ODL with example 3 marks
OQL with example 3 marks

Q2b.What are the different types of indexing in databases? With the help of example explain any two types of indexing.
Ans: Types of indexing 1 mark
Explanation of each type 2.5 marks

Q3a. While designing the distributed database what is the need of data fragmentation? If you want to use fragmentation techniques with the help of appropriate examples explain horizontal and vertical fragmentation.

Ans: Need 1 mark
Horizontal fragmentation with example 2.5 marks
Vertical fragmentation with example 2.5 marks

OR
Explain 2 Phase commit protocol.

Ans : Diagram 2 marks
Explanation 4 marks

Q3. b. What are the different types of type constructors? With appropriate example how to apply these type of type constructors while designing object oriented databases.

Ans: Types of type constructors 1 mark
Explanations with example 5 marks

Q4 a. What is the use of DTD in XML? Give the benefits of DTD. Compare Relational Schema with XML schema.

Ans: Use of DTD 1 mark
Benefits 2 marks
Comparison 3 marks

Q4b. Explain the graph data structure with the help of adjacency matrix and incidence matrix.

Ans: Adjacency matrix 3 marks
Incidence matrix 3 marks

OR.
Explain the Neo4J database.
Explanation of Neo4J 6 marks

Q5a How videos are stored in database and accessed from the database ?

Ans: Video storage 3 marks
Video Access 3 marks

Q5b. While designing the distributed database what architectures are used. Explain any two architectures of distributed databases.

Ans: Types of Architectures 1 mark
Each architecture wieh diagram and explanation 2.5 marks

OR

What are the issues of distributed database design ? Explain any three issues of distributed database design.
Ans: Issues 1 mark
Explanation of 3 issues 5 marks.