Tribhuvan University
Institute of Science and Technology

Advanced Database Management System (CSC-401)
(Model Question Paper)

Full Marks: 60
Pass Marks: 24
Duration: 3 Hrs.

Attempt all Questions.

1. Explain the following terms:
    a. Spatial database
    b. ECA model
    c. Federated DBMS
    d. Well-formed and valid XML document
    e. GIS
    f. Classification and clustering
2. How does a category differ from a regular shared subclass? What is a category used for? Illustrate your answer with suitable examples.

    OR

    Describe the steps of the algorithm for object database design by EER-to-OO mapping.
3. What is the difference between persistent and transient objects? How persistence is handled in typical OO database systems?
4. Describe different implementation issues with object relational database system.
5. Discuss the different technique for executing an equijoin of two files located at different sites. What main factors affect the cost of data transfer?

    OR

    What are the main difference between designing a relational database and an object database?
6. Differentiate between attributes and elements in XML? List some of the important attributes used in specifying elements in XML schema.

    OR

    What is the difference between structured and unstructured complex object? Differentiate identical versus equal objects with examples.
7. Explain mobile computing architecture with suitable diagram.
8. What are the difference and similarities between objects and literals in the ODMG Object Model?
9. What is a data warehouse? How does it differ from a database?

    OR

    Describe multimedia database and what are the different types of multimedia data that are available in current systems?
10. Describe the main reasons for and potential advantages for distributed database. What additional functions does it have over centralized DBMS?

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Advanced Database Management System

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New Course

Candidates are required to give their answers in their own words as far as practicable.
The questions are of equal value.

Attempt all questions.

1.) Explain the following terms :
   - Data mining
   - ECA model
   - Spatial database
   - Specialization and generalization in an ERR model
   - XML and HTML
   - GIS
2.) How can you convert an ERR design to relational design? Discuss with suitable example.
3.) What is OID? How persistent objects are maintained in OODatabase?
4.) Discuss the relative advantages of centralized and distributed database.
5.) Describe different implementation issues with object relational database system.
6.) Discuss the different techniques for executing equijoin of two files located at different sites. What main factors affect the cost of data transfer?
7.) Differentiate between attributes and elements in XML? List some of the important attributes used in specifying elements in XML schema.
8.) Distinguish object oriented database and object relational databases.
9.) What is a data warehouse? How does it differ from a database?
10.) Explain mobile computing architecture with suitable diagram.

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Bachelor Level/ Fourth Year/ Seven Semester/ Science — Full Marks: 60
Computer Science and Information Technology (CSc. 401) — Pass Marks: 24
(Advanced Database Management System) — Time: 3 hours
(NEW COURSE)

Candidates are required to give their answers in their own words as far as practicable.
The questions are of equal value.

Attempt all questions. (10x6=60)

1. Explain the following terms:
   a. Data Mining
   b. ECA model
   c. Spatial Databases
   d. Specialization and generalization in an ERR model
   e. XML and HTML
   f. GIS
2. How can you convert an EER design to relational design? Discuss with suitable example.
3. What is OID? How persistent objects are maintained in OO Database?
4. Discuss the relative advantages of centralized and distributed database.
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7. Differentiate between attributes and elements in XML? List some of the important attributes used in specifying elements in XML schema.
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9. What is a data warehouse? How does it differ from a database?
10. Explain mobile computing architecture with suitable diagram.

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Bachelor Level/ Fourth Year/ Seven Semester/ Science — Full Marks: 60
Computer Science and Information Technology (CSc. 401) — Pass Marks: 24
(Advanced Database Management System) — Time: 3 hours
(NEW COURSE)

Candidates are required to give their answers in their own words as far as practicable.
The questions are of equal value.

Attempt all questions. (10x6=60)

1. Explain the following terms:
   a. Extent
   b. Temporal Database
   c. Degree of homogeneity of DBMS
   d. X Path
   e. Classification and clustering
   f. OLAP
2. Draw an ER Diagram for a hospital with a set of patients and set of doctors associated with each patient a log of various tests and examinations conducted.
3. What is the difference between an object and a….. in the object oriented data model (OOBM)?
4. What are the main difference between designing a relational database and an object database?
5. Discuss some applications of active database. How do spatial databases differ from regular database?
6. Write a schema that provides tags for a person's first name, last name, weight, and shoe size. Weight and shoe size tags should have attributes to designate measuring systems.
7. Distinguish between structured and unstructured complex objects.
8. What is data warehouse? List the characteristics of data warehouse.
9. What are the advantages and disadvantages of extending the relational data model by means of ORDBMS?
10. Enumerate the limitations of conventional database compared to multimedia database.

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Bachelor Level/ Fourth Year/ Seven Semester/ Science — Full Marks: 60
Computer Science and Information Technology (CSc. 401) — Pass Marks: 24
(Advanced Database Management System) — Time: 3 hours
(NEW COURSE)

Candidates are required to give their answers in their own words as far as practicable.
The questions are of equal value.

Attempt all questions. (10x6=60)

1. Explain the following terms:
   a. Data Warehouse
   b. Distribution Transparency
   c. X Query
   d. Distribution transaction
   e. Knowledge base
   f. Classification and clustering
2. Distinguish multiple inheritance and selective inheritance in OO concepts.
3. Define state of an object. Distinguish between persistent and transient objects.
4. Discuss how time is represented in temporal databases and compare the different time dimensions.
5. What is the difference between structured and unstructured complex object? Differentiate identical versus equal objects with examples.
6. What are the advantages and disadvantages of OODBMS?
7. What are the differences and similarities between objects and literals in the ODMG object model?
8. Describe the main reasons for the potential advantage for distributed database. What additional functions does it have over centralized DBMS?
9. Describe the characteristics of mobile computing environment in detail.
10. Differentiate between XML schema and XML DTD with suitable example.

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(NEW COURSE)

Candidates are required to give their answers in their own words as far as practicable.
The questions are of equal value.

Attempt all questions. (10x6=60)

1. Explain the following terms:
   a. Database performance tuning
   b. UML
   c. Subclass vs Superclass
   d. X Query
   e. Calendars
   f. Active Database
2. What are query optimization techniques? Explain.
3. Differentiate between specialization and generalization with example.
4. How do single inheritance, multiple inheritance and selective inheritance differ?
5. What are the differences between structured and unstructured complex objects? Explain.
6. What are the object relational features that have been included in SQL-99?
7. Discuss how time is represented in temporal database and compare different time dimensions.
8. What are the difference and similarities between objects and literals in the ODMG Object Model?
9. Describe multimedia database and what are the different types of multimedia data that are available in current systems?
10. Explain XML schema and XML DTD.

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Bachelor Level/ Fourth Year/ Seven Semester/ Science — Full Marks: 60
Computer Science and Information Technology (CSc. 401) — Pass Marks: 24
(Advanced Database Management System) — Time: 3 hours
(NEW COURSE)

Candidates are required to give their answers in their own words as far as practicable.
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Attempt all questions. (10x6=60)

1. Discuss different constraints of specialization and generalization.
2. Draw an ER diagram for a hospital with a set of patients and a set of doctors. Associated with each patient a log of various tests and examinations conducted.
3. Define encapsulation? How is it used to create abstract data types?
4. What is versioning? Why is it important? What is the difference between versions and configurations?
5. What is object relational database? Discuss object relational features of SQL.
6. Define active database. Discuss some applications of active databases.
7. What are the difference between valid time, transaction time, and bitemporal relations?
8. What is data mining? Discuss data mining as a part of knowledge discovery process.
9. What is data warehouse? Discuss the typical functionality of data warehouse.
10. What is mobile database? Discuss the characteristics of mobile environments.