Reg. No. : | | | | | | | | | | | | |

Question Paper Code : S1354

M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2016.

First Semester

DMC 7103 — DATABASE MANAGEMENT SYSTEM

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the function of DBA.

2. Differentiate Embedded SQL and Dynamic SQL.

3. State the anomalies of 2NF.

4. State the pros of Boyce codd normal form.

5. State the properties of transaction.

6. Give an example of two phase Commit protocol.

7. What is query processing?

8. Differentiate between static and dynamic hashing.

9. Give an example for association rule.

10. What are the advantages of XML databases?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the various disadvantages in the file system and explain how it can be overcome by the database system. (8)

(ii) Construct an ER diagram for an air line system. (8)

Or

(b) Assume the following table. (8)

Degree (degcode, name, subject)

Candidate (seatno, degcode, name, Semester, month, year, result)

Marks (seatno, degcode, semester, month, year, papcode, marks)

Degcode-degree code. Name-name of the degree (MSC. MCOM)

Subject — subject of the Course Eg. Phy, Pap code — paper code eg. Al.

Solve the following queries using SQL (8)

(i) Write a SELECT statement to display all the degree codes which are there in the candidate table but not Present in degree table in the order of degcode

(ii) Write a SELECT statement to display the name of all the candidates who have got less than 40 marks in exactly 2 subjects.

(iii) Write SELECT statement to display the name, subject and number of candidates for all degrees in which there are less than 5 candidates.

(iv) Write a SELECT statement to display the names of all the candidates who have got highest total marks in MSC.,(Maths).

12. (a) (i) Discuss in detail about the role of Transitive dependency in 3NF. (8)

(ii) State 3NF and BCNF. Compare 3NF and BCNF with respect to lossless join decompositions and dependency preservation with help of an example. (8)

Or

(b) (i) Explain Boyce-codd normal form with an example. Also state how it differs from that of 3NF. (8)

(ii) Discuss join dependencies and fifth normal form and explain why 5NF. (8)

13. (a) (i) What is concurrency control? How is it implemented in DBMS? Illustrate with a suitable example. (8)

(ii) Explain various recovery techniques during transaction in detail. (8)

Or

(b) (i) State the two-phase commit protocol. Discuss the implications of a failure of the coordinator and some participants. (8)

(ii) Discuss in detail about the transaction recovery with primitive operations. (8)

14. (a) (i) What is RAID? List the different levels in RAID technology and explain its features.

(ii) Illustrate indexing and hashing techniques with suitable example.

Or

(b) (i) Explain in detail about B+ tree index files with its merits and demerits.

(ii) What is file organization? How files are organized in data bases?

15. (a) Suppose an Object oriented database had an object A, which references object B, which in turn references object C. Assume all objects are on disk initially? Suppose a program first dereferences A, then dereferences B by following the reference from A, and then finally dereferences C. Show the objects that are represented in memory after each dereference, along with their state. (16)

Or

(b) (i) Write short notes on XML Databases. (8)

(ii) Discuss in detail about information retrieval. (8)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80354

M.C.A. DEGREE EXAMINATION, AUGUST 2015.

First Semester

DMC 7103 — DATABASE MANAGEMENT SYSTEM

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are advantages of DBMS over File based system?

2. Where do you need Embedded SQL? Give an example.

3. Differentiate between BCNF and 3NF.

4. What is multivalued dependency? Give an example.

5. What is deadlock? How it should be handled?

6. How do you perform system recovery?

7. What is the advantage of indexed file organization?

8. Write the significance of RAID.

9. When would you select XML data bases?

10. How do you measure relevance ranking?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the various levels of database schema based on data abstraction. How does the schema support different type of data independence? (16)

Or

(b) (i) Explain the following data modeling design techniques with examples. (8)

- Weak Entity
- Strong Entity
- Specialization
- Generalization

(ii) Explain the following relational algebra operators with examples. (8)

- Selection and projection
- Equi-join and natural join.

12. (a) (i) Why Normalization is required? (4)

(ii) Explain the key points of 1NF, 2NF and 3 NF normalization with an example. (12)

Or

(b) (i) Explain dependency preservation with an example. (8)

(ii) Discuss join dependencies with an example. (8)

13. (a) Explain about Two phase locking protocols with an example. (16)

Or

(b) (i) Explain ACID properties of transaction with an example. (8)

(ii) Explain about Transaction control processing use of SQL commands. (8)

14. (a) Explain the B tree and B+ tree with an example. How it should be use for file Organization? (16)

Or

(b) Differentiate between Static hashing and dynamic hashing with an example. (16)

15. (a) Explain Distributed Database architecture with neat diagram. (16)

Or

(b) Explain the crawling and indexing of search engine process with an example. (16)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 22356

M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2015.

First Semester

DMC 7103 — DATABASE MANAGEMENT SYSTEM

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give any two purposes of Database System.

2. Write the syntax for Alter command.

3. What is Functional Dependency?

4. What is meant by normalization of Data?

5. Define Atomicity.

6. Differentiate between System Recovery and Media Recovery.

7. List out any two needs for Concurrency.

8. How do you measure the cost of query evaluation?

9. Define Classification.

10. What is meant by Crawling the web?

PART B — (5 × 16 = 80 marks)

11. (a) The tourism department wishes to computerize its data. The information consists of monuments of tourist interest, their location and history. Monuments are classified according to historical, religious and architecture importance. The list of facilities available at each sport is also available. These give

(i) living accommodation in terms of hotels, their names, category and the number of rooms available and

(ii) local transport facilities in terms of service provider name, tours with their tariff and timing.

(1) Draw an E-R diagram. (8)

(2) Transform the E-R diagram to a Relational Schema. (8)

Or

(b) (i) Explain the Database Management System Architecture with neat diagram. (10)

(ii) What are the needs for the development of relational databases? (6)

12. (a) Explain Normalization? Explain first, second and third normal forms describing the advantages of normalization. (16)

Or

(b) Explain briefly about armstrong rules on functional dependency and write the algorithm to compute functional dependency closure. (16)

13. (a) When is a transaction said to be deadlocked? Explain deadlock prevention method with an example. (16)

Or

(b) Explain currency control mechanism. Discuss the need with example. (16)

14. (a) Draw and explain the structure of b+ tree index. (16)

Or

(b) Explain Query processing with example to perform sort and join operation. (16)

15. (a) (i) Explain in detail association rules with example. (8)

(ii) Explain anatomy of XML document. (8)

Or

(b) Write a detailed note on Object oriented database with necessary diagram. (16)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 46353

M.C.A. DEGREE EXAMINATION, AUGUST 2014.

First Semester

DMC 7103 — DATABASE MANAGEMENT SYSTEM

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the differences between physical and logical levels of data abstraction.

2. Comment on the possibility of modifying the physical schema without disturbing the logical schema.

3. When is a relation said to be in second normal form?

4. What is meant by partial dependency in normalization?

5. What are the ACID properties in Transactions?

6. Differentiate between recoverable and cascadeless schedule.

7. What are the merits and demerits of ordered indices?

8. Compare and contrast static hashing with dynamic hashing.

9. List out the steps that are involved in Data mining.

10. What are the advantages of crawling and indexing the web?

PART B — (5 × 16 = 80 marks)

11. (a) For the following problem definition :

The musical company wants to store information about the musicians who perform on its albums. Each musician has a musician id, a name, an address and a phone number. Some musicians may have the same address and some of them may have more than one phone number. Each musician may play several instruments and an instrument and may be played by several musicians. Each instrument has name and a musical

key. The album recorded has a title, a copyright date, a format and an album identifier. Each album has a number of songs where a song has a title and an author. Each song may be performed by several musicians and a musician may perform a number of songs. One of the musicians of the song acts as a producer. A producer may produce several albums.

(i) Draw an E-R diagram.

(ii) Transform the E-R diagram to a Relational Schema.

Or

(b) Consider the following relational schema

Sailors (SailorId, SailorName, Rating, Age)

Reserves (SailorId, BoatId, Day)

Boats (BoatId, BoatName, Color)

Express the following queries in Relational Algebra

(i) Find the names of sailors who have reserved the same color boats as the sailor named 'John'.

(ii) Find the colors of boats reserved by sailor 'John'.

(iii) Find the names of sailors who have reserved a red or a green boat.

(iv) Find the names of sailors who have reserved at least two boats.

(v) Find the names of sailors who have reserved all boats.

(vi) Find the names of boats that are reserved by more than one sailor.

(vii) Give an SQL DDL definition of the above schema.

12. (a) (i) What are the pitfalls in relational database design? With a suitable example, explain the role of functional dependency in the process of normalization.

(ii) Define Normalization? Discuss with the help of an example how the update anomaly is caused due to bad relational database design.

Or

(b) (i) Discuss in detail about the role of Transitive dependency in 3NF.

(ii) State 3NF and BCNF. Compare 3NF and BCNF with respect to lossless join decompositions and dependency preservation with help of an example.

13. (a) (i) Explain in brief about how transactions are possible in Distributed database.

(ii) How can we achieve concurrency control achieved in DBMS through Serializability?

Or

(b) (i) What is Deadlock? Discuss the different ways of preventing deadlock and detecting deadlock.

(ii) Explain the deferred and immediate-modification version of the log-based recovery scheme.

14. (a) (i) List the different levels in RAID technology and explain its features.

(ii) Describe the different methods of implementing variable length records.

Or

(b) (i) Explain the various steps involved in query processing? How would you estimate the cost of query?

(ii) Explain in detail about B+ tree index files with its merits and demerits.

15. (a) (i) Discuss in detail about the fragmentation and replication transparency in distributed databases.

(ii) Write short notes on :

(1) Object Oriented Databases.

(2) XML Databases.

Or

(b) (i) Explain in detail about the architecture and transaction processing of distributed databases.

(ii) Write short notes on :

(1) Relevance ranking.

(2) Information Retrieval.

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 96353

M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2014.

First Semester

DMC 7103 — DATABASE MANAGEMENT SYSTEM

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write Advanced SQL features.

2. What are embedded SQL?

3. What is 2NF? Give example.

4. Give an example on lossy and lossless decomposition.

5. State the ACID properties.

6. State the need for concurrency.

7. What are the types of indexing available?

8. State the steps in query processing.

9. What are data fragmentations? State the types of fragmentations.

10. State the usage of CLOB and BLOB.

PART B — (5 × 16 = 80 marks)

11. (a) (i) State the main functions of database administrator. (8)

(ii) Explain the difference between weak and strong entity set with suitable example. (8)

Or

(b) (i) Explain the overall architecture of the data base system in detail. (8)

(ii) Distinguish between relational algebra and relation calculus with example. (8)

12. (a) Define the following with suitable example.

(i) Functional dependency. (4)

(ii) Entity integrity. (6)

(iii) Referential integrity. (6)

Or

(b) Explain the normalization process using multi valued dependencies and using join dependencies. (16)

13. (a) (i) Explain the two phase commit process with example. (8)

(ii) What are the SQL facilities for concurrency? Explain it. (8)

Or

(b) (i) Distinguish between media recovery and system recovery. (8)

(ii) Describe lock based protocol with suitable example. (8)

14. (a) What is RAID? State and explain the different level of RAID and its features.

Or

(b) (i) State and explain the dynamic hashing with example. (8)

(ii) What is the need for indexing and hashing for database? Explain the ordered indices with suitable example. (8)

15. (a) (i) Explain the process of crawling and indexing in the web. (8)

(ii) Explain the transaction processing in distributed database. (8)

Or

(b) (i) What are the various OLAP operations? Explain them with suitable example. (8)

(ii) Write about XML Databases with example. (8)