MASTER OF COMPUTER APPLICATIONS (CBCS – 2022 COURSE)
M.C.A. Sem – I : WINTER- 2022
SUBJECT : APPLIED DATABASE MANAGEMENT SYSTEMS

Day : Tuesday

Date : 29-11-2022

W-25932-2022

Time : 02:00 PM-05:00 PM

Max. Marks : 100

N.B.

1) Attempt any **FIVE** questions from Section – **I**. Each questions carries **12** marks.
2) Attempt any **TWO** questions from Section – **II**. Each questions carries **20** marks.

SECTION – I

Q. 1   Explain Database Architecture. **(12)**

Q. 2   State Codd's 12 rules for RDBMS. **(12)**

Q. 3   **a)**   Explain any three Role and Responsibilities of DBA. **(06)**

   b)   What is transaction? Explain transaction states. **(06)**

Q. 4   Explain different set operations of Relational Algebra. **(12)**

Q. 5   Explain Timestamp based protocol. **(12)**

Q. 6   Write short notes on any **TWO** of the following: **(12)**
   a)   Mapping Cardinalities
   b)   Relational Data Model
   c)   Static and Dynamic hashing

SECTION - II

Q. 7   **a)**   What is MongoDB? Explain its different functionalities. **(10)**

   b)   Explain different strengths and weaknesses of NoSQL. **(10)**

Q. 8   **a)**   Normalize the following table up to 3NF: **(10)**
   Scenario: Customers belong to a particular branch, this branch is supervised by a particular manger. Customers purchase stock. Each stock has a particular title and format. The different field headings are :
   CustomerID (PK), Name, Address, BranchID, BranchMgr, StockID, Title, format.

   b)   Explain data encryption and decryption. **(10)**

Q. 9   Consider the following requirements of a University Database System. **(20)**
   The university keep track of its students. It stores the student details as StudName, EntrollementID, BirthDate, MobileNumber, Gender and Address. The university also keeps track of the courses offered by it. The information that is to be kept about the courses are CourseCode, CourseName, fees, Eligibility and CourseStartingDate. The university has many departments. A course associated with only one department. Each department has a location address and name. A Student can register only for one department at a time. Draw Entity Relationship Diagram(ERD) for the university. Also map ERD into relational model. Make suitable assumptions if any.

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