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MCS–043

MASTER OF COMPUTER APPLICATIONS (MCA) (REVISED)

Term-End Examination

December, 2023

MCS-043 : ADVANCED DATABASE MANAGEMENT SYSTEMS

Time : 3 Hours *Maximum Marks : 100*

Note : *Question No.* ***1*** *is compulsory. Answer any* ***three*** *questions from the rest.*

1. (a) How does the technique of Knowledge Discovery in Databases in Databases (KDD) differ from Data Mining ? Can we use these two techniques Interchangeably ? Justify. 5

   (b) Compare the utility of ER diagram and EER diagram. What are the various constraints of EER diagrams ? 5

   (c) Discuss index implementations in PostgreSQL, with the help of suitable examples. 5

(d) Describe the term "Granularity" in databases. How does granularity relate to the security of databases ? 5

(e) Briefly discuss the concept of shadow paging, with suitable example. Give advantages and disadvantages of shadow paging. 5

(f) Compare star schema and snowflake schema, give suitable example for each. 5

(g) What are views in SQL ? Discuss the significance of views in databases. Write an example code in SQL to create a view. 5

(h) What is the utility of multi-version schemes in databases ? Discuss any *one* multi-version scheme, with suitable example. 5

2. (a) What are the limitations of RDBMS ? Also, discuss the need of object oriented databases. 5

(b) How does object relational DBMS differ from object oriented DBMS ? 5

(c) Briefly discuss the utility and functioning of the following : 10

(i) XML parser

(ii) XML namespace

(iii) XSL transformations

(iv) XPATH

3. (a) Draw block diagram to exhibit the architecture of Data Warehouse. Briefly discuss the role of various components involved in the architecture of Data Warehouse. 8

   (b) Discuss the K-Nearest Neighbours (K-NN) algorithm. Support your discussion with suitable example. 7

   (c) Differentiate between Two-phase Commit (2PC) and Three-phase Commit (3PC). 5

4. (a) Compare and contrast the following : 10

      (i) Inclusion dependencies and Template dependencies

      (ii) Nested loop join and Block Nested loop join

   (b) Explain the use of UML diagrams as an aid to design database specifications. 10

5. Write short notes on any *five* of the following, give suitable example for each : 4×5=20

   (i) Embedded SQL

   (ii) Dynamic SQL

   (iii) ETL tools

   (iv) OLAP

   (v) Multiversion timestamp ordering

   (vi) Statistical Database Security