

**MASTER OF COMPUTER  
APPLICATIONS (MCA) (REVISED)**

**Term-End Examination**

**December, 2020**

**MCS-043 : ADVANCED DATABASE  
MANAGEMENT SYSTEMS**

*Time : 3 Hours*

*Maximum Marks : 100*

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

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1. (a) Differentiate between Document Type Definition (DTD) and XML Schema. Explain each using an example. 5
- (b) How is Knowledge Discovery in Databases (KDD) related to Data Mining ? 5
- (c) What are Indexes ? Discuss the utility of indexes in DBMS. Discuss the different types of indexes available in Postgre SQL.5
- (d) What is relational algebra ? What are basic operations of relational algebra ? 5

- (e) What is Data Warehousing ? Discuss various characteristics of Data Warehousing. 5
- (f) Differentiate between star schema and snowflake schema with the help of an example. 5
- (g) What are multimedia databases ? Discuss the challenges in designing the multimedia databases. 5
- (h) Explain 3 Phase Commit (3PC) protocol, with the help of an example. 5
2. (a) Differentiate between Assertions and Views. Give suitable example for each. 5
- (b) How does serial schedule differ from a serializable schedule ? Give an example of a serial schedule and a serializable schedule. 7
- (c) What is UML ? List the UML diagrams and classify them. How does UML have an edge over the other database designing tools ? 8

3. (a) Describe the reference architecture of a distributed DBMS, with the help of a block diagram. 5
- (b) What is Datagrid ? Why is datagrid required ? ? Describe the structure of a datagrid with the help of a suitable block diagram. 7
- (c) Discuss classification as a tool of Data Mining. Explain ID3 algorithm. 8
4. (a) Compare and contrast any *two* of the following : 10
- (i) K-means and K-nearest neighbour algorithm
  - (ii) Centralized 2PL and Distributed 2PL
  - (iii) Inclusion dependencies and Template dependencies
  - (iv) Logical database design and Physical database design
- (b) What do you mean by Multiversioning ? What are the various schemes available for multiversioning ? Describe any *two* schemes in detail. 10

5. (a) Explain Multi Valued Dependency (MVD) and Join Dependency (JD) with the help of an example. What is trivial MVD and trivial JD ? Discuss fourth normal form and fifth normal form with the help of an example. 10
- (b) What is SQLJ ? What are the requirements of SQLJ ? Briefly describe the working of SQLJ. “Can SQLJ use dynamic SQL ?” If yes then how ? Otherwise specify the type of SQL it can use. Justify your answer. 10