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MCS-043

M. C. A. (REVISED)
Term-End Examination
June, 2019

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

*Time : 3 Hours**Maximum Marks : 100*

*Note : Question number 1 is compulsory. Attempt
any three questions from the rest.*

1. (a) What is a data warehouse ? Describe the process of ETL for data warehouse. 5
- (b) What is the significance of cursors in embedded SQL ? Explain with the help of an example. 5
- (c) What is OLAP ? How does OLAP differ from OLTP ? 5
- (d) What are data marts ? What is the significance of creating data marts ? 5

- (e) What is join dependency ? Explain with an example trivial join dependency. 5
- (f) What is the effect of data granularity over database security ? Give suitable example. 5
- (g) What is the significance of creating views ? How is a view created using SQL ? Explain using an example. 5
- (h) How is hash-join of two relations r and s computed ? 5
2. (a) Explain the terms lossless decomposition and dependency preserving decomposition. Consider a relation R (A, B, C, D, E, F) with functional dependency set
 $FD = \{A \rightarrow BC, C \rightarrow A, D \rightarrow E, F \rightarrow A, E \rightarrow D\}$.
- If R is decomposed into R_1 (A, C, D); R_2 (B, C, D); R_3 (E, F, D), then check whether the decomposition is both lossless and dependency preserving. 10
- (b) How do distributed databases differ from the centralized databases ? Describe the architecture of distributed databases with the help of a diagram. 10

3. (a) What is multivalued dependency ? How is multivalued dependency related to 4NF ? Explain with suitable example. 5
- (b) Justify the statement "BCNF is stronger than 3NF". 5
- (c) Differentiate between star schema and snowflake schema. 5
- (d) Differentiate between ODBC and JDBC. What are the components required for implementing ODBC in a system ? 5
4. (a) What is k-means clustering ? How does it differ from nearest neighbour clustering ? 5
- (b) What is Audit Trail ? Give benefits of audit trail in context of DBMS. 5
- (c) Discuss classification as a tool of data mining. Describe ID 3 algorithm for classifying datasets with a suitable example. 10

5. (a) How does PostgreSQL perform storage and indexing ? Discuss the types of indexes involved in PostgreSQL with suitable examples. 10
- (b) What is SQLJ ? Give requirements of SQLJ. Discuss the working of SQLJ. "Can SQLJ use dynamin SQL?" If yes, then how ? Otherwise, specify the type of SQL it can use. 10