MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : PCC-CS601/PCCCS601 Database Management Systems

UPID : 006577

Time Allotted : 3 Hours *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer any ten of the following : [1 × 10 = 10]

(I) The information about data in a database is called _____

(II) Which one of the following commands is used to modify a column inside a table?

(III) What is the full form of NTFS?

(IV) What is the full form of TCL?

(V) _____ ACID property states that only valid data will be written to the database

(VI) In which of the following formats data is stored in the database management system?

(VII) The database system must take special actions to ensure that transactions operate properly without interference from concurrently executing database statements. This property is referred to as_____

(VIII) The database design prevents some data from being represented due to ____ anomaly.

(IX) We can use the following three rules to find logically implied functional dependencies. This collection of rules is called___.

(X) Which character function can be used to return a specified portion of a character string in SQL?

(XI) The normal form which satisfies multivalued dependencies and which is in BCNF is___

(XII) DBMS periodically suspends all processing and synchronizes its files and journals through the use of ____

Group-B (Short Answer Type Question)

Answer any three of the following : [5 x 3 = 15]

2. State Armstong's three axioms. [5]

3. What is functional dependency? What is join dependency? [5]

4. Explain Lossless and Lossy decomposition by using suitable examples. [5]

5. Write a short notes on B+ Tree and B- Tree [5]

6. What is metadata and what is data dictionary? [5]

Group-C (Long Answer Type Question)

Answer any three of the following : [15 x 3 = 45]

7. (a) What is the difference between DELETE, TRUNCATE and DROP commands? [3]

(b) Explain various update anomalies that can arise in a relational database with examples. [7]

(c) Explain the functionalities of DBA. [5]

8. (a) Why do we need query optimization? [3]

(b) Consider the relation R(A, B, C, D, E) with the set of f = (A->C, B->C, C->D, DC -> C, CE -> A). Suppose the relation has been decomposed by relations R1(A,D), R2(A, B), R3(B, E), R4(C, D. e), R5(A, E). Is this decomposition lossless or lossy? Justify your answer. [8]

(c) Write the features of tuple relational calculus. [4]

9. (a) Consider the relation R = {A, B, C, D, E, F, G, H, I, J} and the set of functional dependencies: F = {AB->C, A-> DE, B-> F, F->GH, D->IJ} Decompose R into 3NF. [7]

(b) Define strong entity set and weak entity set. Give a proper example. [4]

(c) What do you mean by derived attribute? Give an example. [4]

10. (A) What is blocking factor. Explain the difference between B-tree and B+ tree indexing with proper example. [5+5+5]

(B) Insert the following elements in B-Tree of order 4:

65, 66, 70, 71, 74, 80, 91, 81, 99, 82, 75, 77, 89, 56

(C) Explain different Hashing techniques.

11. (A) What is the difference between vertical and horizontal fragmentation. [5+5+5]

(B) Write short notes on Distributed database management system.

(C) Write a short notes on Web based database management system.

*** END OF PAPER ***