



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 x 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 Armstrong'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 ***