HALDIA INSTITUTE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTION UNDER MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL)

Paper Code: PCC-CS 501

Paper Name: Database Management System

Time Allotted: 3 Hours *Full Marks*: 70

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable

Group – A
(Multiple Choice Type Questions)

Choose the correct alternatives from the followings: 15 x 1 = 15

1. (i) A huge collection of the information or data accumulated form several different sources is known as _
a) Data flow diagram b) State transition diagram
c) Entity-relationship diagram d) Entity sequence diagram

(ii) An entity set that does not have sufficient attributes to form a primary key is a
a) Strong entity set b) Weak entity set c) Simple entity set d) Primary entity set

(iii) E-R model uses which symbol to represent weak entity set?
a) Dotted rectangle b) Diamond
c) Doubly outlined rectangle d) Doubly outlined diamond

(iv) By normalizing relations or sets of relations, one minimizes ___.
a) Data b) Fields c) Redundancy d) Database

(v) Redundancy is reduced in a database table by using the ___ form.
a) Abnormal b) Normal c) Special d) None

(vi) When a relation contains an atomic value, it is a ___ relation.
a) 1NF b) 2NF c) 3NF d) BCNF

(vii) 2NF relations are those that are in 1NF with all the attribute types dependent on the ___ key.
a) Primary b) Foreign c) Composite d) Alternate

(viii) In a relation, ___ are selected using the tuple relational calculus.
a) Attributes b) Tuples c) Relation d) Calculus

(ix) Which of the following schemas does define a view or views of the database for particular users?
a) Internal schema b) Conceptual schema c) Physical schema d) External schema

(x) A lock that allows concurrent transactions to access different rows of the same table is known as a
a) Field-level lock b) Row-level lock c) Table-level lock d) Database-level lock

(xi) A system is in a _____ state if there exists a set of transactions such that every transaction in the set is waiting for another transaction in the set.
a) Idle b) Waiting c) Deadlock d) Ready

(xii) A B-tree of order 4 and of height 3 will have a maximum of keys.
a) 255 b) 63 c) 127 d) 188

(xiii) The goal of hashing is to produce a search that takes
a) O (1) time b) O (n2) time c) O (log n) time d) O (n log n) time

(xiv) Prevention of access to the database by unauthorized users is referred to as:
a) Integrity b) Productivity c) Security d) Reliability

(xv) Grants privileges on SQL authorization mechanism
a) Entire relation b) Specified tuples c) Specified attributes d) Both A and B

Group – B
(Short Answer Type Questions)

Attempt any three from the followings: **3 x 5 = 15**

2. (i) What is RDBMS? (ii) How many types of database languages are? 2+3

3. (i) Give R (X, Y, Z, W) and Set of Functional Dependency FD = {XY → ZW, W → X}. The question is to calculate the candidate key and no. of candidate key in above relation R using a given set of FDs.
(ii) What is relational algebra in DBMS? 4+1

4. (i) Explain various transaction operations. (ii) Define two phase locking (2 PL). 3+2

5. (i) Describe the Search Operation in B-Tree. (ii) What is hashing in DBMS? 3+2

6. (i) Discuss the need of Distributed Database In DBMS.
(ii) What is Homogenous Distributed Database? 3+2

Group – C
(Long Answer Type Questions)

Attempt any four from the followings: **4 x 10 = 40**

7. (i) Explain Entity, Entity Type, and Entity Set in DBMS?
(ii) What are the different levels of abstraction in the DBMS?
(iii) What is E-R model in the DBMS? 5+3+2

8. (i) Describe the integrity constraints in DBMS with its types?
(ii) What is network model in DBMS?
(iii) What is multivalued attribute in DBMS? 5+3+2

9. (i) What are basic SQL skills?
(ii) What do you mean by table and field in SQL?
(iii) What is 3NF? Give an example of 3NF. 3+2+5

10. (i) What's normalization, and how does it differ from denormalization?
(ii) Describe the functional dependence in DBMS?
(iii) What is inner join in DBMS? 3+5+2

11. (i) Explain various types of Locks in Detail.
(ii) What are the ACID properties of transaction?
(iii) What is Wait-Die scheme in DBMS? 5+3+2

12. (i) Explain Different levels of data and process distribution.
(ii) What is SQL injection?
(iii) What is concurrency in a distributed system? 5+2+3