GIET Main Campus (Autonomous)
Gunupur-765 022

B.TECH. DEGREE EXAMINATION-NOV-DEC-2018
End Semester Examination
BCSES3052-Database Management System
(Regulations 2017)(Common to Chemical, EE, EEE, and Mechanical Branches)

Time : 3 Hours   Maximum : 100 Marks   Question Code:221212
Answer ALL Questions

PART A - (10 X 2 = 20 Marks)

1. (a) Consider a database table R with attributes A and B. Which of the following SQL queries is illegal? [CO1][PO1]
   a) SELECT A FROM R;
   b) SELECT A, COUNT(*) FROM R;
   c) SELECT A, COUNT(*) FROM R GROUP BY A;
   d) SELECT A, B, COUNT(*) FROM R GROUP BY A, B;

   (b) Which level of Abstraction describes what data are stored in the Database?   [CO1][PO1]
   a) Physical level
   b) View level
   c) Abstraction level
   d) Logical level

   (c) An instance of relational schema R (A, B, C) has distinct values of A including NULL values. Which one of the following is true?   [CO2][PO1]
   a) A is acandidatekey
   b) A is not a candidatekey
   c) A is aprimaryKey
   d) Both a and c

   (d) Using relational Algebra, the Query that finds customers who have balance more than 10,000 is............ [CO2][PO2]
   a) π customer-name (σbalance > 1000(Deposit))
   b) σ customer-name (σbalance > 1000(Deposit))
   c) π customer-name (σbalance > 1000(Borrow))
   d) σ customer-name (σbalance > 1000(Borrow))

   (e) Consider the join of a relation R with relation S. If R has m tuples and S has n tuples, then the maximum size of joinis: [CO2][PO2]
   a) mn
   b) m+n
   c) (m+n)/2
   d) 2(m+n)

(f) A file produced by a spreadsheet [CO3][PO1]
    A. is generally stored on disk in an ASCII text format
    B. can be used as is by the DBMS
    C. both a and b
    D. none of the above

(g) If an index is ....the metadata and statistics continue to exists [CO3][PO1]
    A. Disabling
    B. Dropping
    C. Altering
    D. Both a and b

(h) The ....is the fastest and most costly form of storage, which is relatively small; its use is managed by the computer system hardware. [CO3][PO1]
    A. Cache
    B. Disk
    C. Main memory
    D. Flash memory

(i) In a two-phase locking protocol, a transaction release locks in âĂȩâĂȩâĂȩ phase. [CO4][PO2]
    A. shrinking phase
    B. growing phase
    C. running phase
    D. initial phase

(j) In which state, the transaction will wait for the final statement has been executed? [CO4][PO1]
    A. Active
    B. Failed
    C. Aborted
    D. partially committed

PART B - (10 X 2 = 20 Marks)

2. (a) Illustrate any four applications of database in real life. [CO1][PO2]

   (b) List and Define the different types of data independency. [CO1][PO1]

   (c) Define Division operation with Relational Algebra. [CO2][PO2]

   (d) What is an SQL sub query? [CO2][PO1]

   (e) What is Database Design and Explain [CO2][PO1]

(f) Define Atomicity and Aggregation. [CO3][PO1]

(g) Explain B+ tree index files [CO3][PO1]

(h) What is known as heap, sequential and hashing file organization? [CO3][PO1]

(i) What are two pitfalls (problems) of lock-based protocols? [CO4][PO1]

(j) What you mean as commit and undo in case of transaction? [CO4][PO1]

PART C - (4 X 15 = 60 Marks)

3. (a) (i) Explain in detail about functionalities of DBMS with its applications? [10][CO1][PO1]

    (ii) What do you mean by data abstraction and explain different levels [5][CO1][PO1]

(or)

(b) (i) Define database language? Write its types? [5][CO1][PO1]

    (ii) Explain the database architecture with different layers [5][CO1][PO1]

4. (a) (i) Construct an ER diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted. Then generate different tables from it. Treats are relation between doctor and patients. Logs are maintained with patients and tests.
The attributes of patients, doctors and tests are as follow:
Doctors:
Doctor ID as key attributes
Name
Address composite attributes
Qualification multi values
Specialization multi values
Patient:
Patient ID as key attributes
Types
Details
Test
Types as key attributes
Description
Convert E-R diagram to Relational Schema. [10][CO2][PO2]

(ii) What are the pitfalls in relational database design? With a suitable example, explain the role of functional dependency in the process of normalization. [5][CO2][PO2]

(or)

(b) (i) What is ER Modelling? Draw an ER Diagram for University Registration System [5][CO2][PO2]

(ii) With relevant examples discuss the various operations in Relational Algebras. [10][CO2][PO2]

5. (a) (i) Describe the structure of B+ tree and give the algorithm for search in the B+ tree with practical example. [10][CO3][PO2]

(ii) Discuss about storing of data with its associated storage devices. [5][CO3][PO1]

(or)

(b) (i) Describe about the constraints and its types with proper example each. [8][CO3][PO1]

(ii) Illustrate about RAID in detail. [7][CO3][PO1]

6. (a) (i) Explain the following a)database failure b)database recovery. [10][CO4][PO1]

(ii) Explain about atomocity, Isolation of a transaction with Bank accounts A and B ,funds transfer example? [5][CO4][PO1]

(or)

(b) (i) Discuss the following: a)Distributed databases b)Parallel databases [10][CO4][PO1]

(ii) Explain about data warehousing and data mining. [5][CO4][PO1]