Term End External Examination 4th Semester (Session- July 2024)

Subject: Computer Science

Course No and Title: CAPC1422N/Introduction to database System

Time: 2.15 hours Max Marks:100 Min. Marks:40

Section A: Objective Type Questions

Q1. Choose the appropriate Answer: (8x1.5=12)

i. Data Integrity refers to

A Completeness, correctness and accuracy of data **B** Quality, availability and security of data.

C Store, retrieve and update data **D** Flexibility, sharing and inconsistency.

ii. In ER model, a number of entities are clubbed together into one entity based on their similar characteristics. The process is called

A Specialization. **B** Generalization.

C Aggregation **D** Abstraction

iii. Relational algebra is

A High Level language **B** Procedural Language

C Non-Procedural Language **D** Data manipulation Language

iv. Cardinality in Relational Algebra means:

A Number of tables. **B** Number of Attributes.

C Number of tuples. **D** Number of keys.

v. The statement in SQL which allows to change the definition of a table is:

A Select **B** Create

C Update **D** Alter

vi. Which one of these cant be used when querying a view

A Select **B** Order by

C From **D** Where

vii. We use this to ensure maintain transactional integrity and consistency in databases:

A Pointers **B** Cursors

C Locks **D** Triggers

viii. ACID Properties of database are used to ensure_____ before and after transactions.

A Consistency **B** Redundancy

C Latency **D** Anonymity

Section-B: Descriptive Type Questions (Short Type)

Q2: Answer all the Questions (8 x 4 =32)

i. What is a Database? Explain basic operations performed on Databases.

ii. What is abstraction? Briefly explain three levels of Database Abstraction?

iii. What are Keys? List different types of keys used in RDBMS. Explain any two?

iv. What are views? Explain briefly with an example.

v. Explain transitive dependency with an example.

vi. Write syntax of *"Group By with having clause"* command with an example. Consider a table student (roll no, sub) display roll number wise, subject count of opted subjects by students.

vii. What are concurrency control protocols? List types of concurrency control protocols.

viii. Elaborate Database backups. Briefly explain physical and logical backups.

Section – C: Descriptive Type Questions (Medium Type)

Answer all the questions: (4 x 7=28)

Q3. Explain basic differences between File System and Database Systems approach.

OR

Explain three level DBMS Architecture. Briefly explain Data Independence and its types?

Q4. What is a relational Database Management System? Briefly describe its basic concepts.

OR

What do you mean by Relational Integrity constraint? Briefly explain categories of integrity constraints.

Q5. Explain Lossy and Lossless decomposition.

OR

Define Equi-Join and Outer-Join in SQL with an example of each.

Q6. What do you understand by concurrency control? Briefly explain three problems of concurrency control.

OR

What is serializability of schedules? Explain conflict and view serializability.

Section – D: Descriptive Type Questions (Long Type)

Answer any two of the following: (2 x 14=28)

Q7. Discuss ER Model of database design? Briefly describe its building blocks. Draw necessary diagrams for classifications.

Q8. What do you mean by Relational Algebra? Briefly explain any Two Set Operations (Union, intersection, Cartesian Product, difference) and One Special Operations (Select, project, join) in relational algebra with examples of each?

Q9. What is Database Normalisation? Briefly explain types of normalisation. Discuss advantages and disadvantages of normalisation.

Q10. Define Transactions? What are its various states? Briefly explain ACID Properties of transaction.