R16

Code No: 135CA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, December - 2019

DATABASE MANAGEMENT SYSTEMS

(Common to CE, EEE, ME, ECE, EIE, MCT, ETM, MSNT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	Define data mining.	[2]
b)	Contrast procedural DML and declarative DML.	[3]
c)	Why is intersection a derived operation in Relational Algebra?	[2]
d)	What is an active database? List challenges associated with it.	[3]
e)	Define join dependency.	[2]
f)	What is meant by spurious tuples? Give example.	[3]
g)	Define serializability.	[2]
h)	What is the role of remote backup systems in database recovery?	[3]
i)	Define unclustered index.	[2]
j)	How to measure the disk access time?	[3]

PART – B

(50 Marks)

2.a) Classify the data models.
b) What is the importance of integrity constraints in database? Explain with illustrations. [5+5]

OR

3. Construct an entity relationship diagram to perform conceptual database design of online e-commerce application such as Mynthra.com. [10]

4.a) Analyze the expressive power of relational algebra.
b) Compare tuple relational calculus and domain relational calculus. [5+5]

OR

5. Consider the following database schema to write queries in SQL.
Student (Snum: integer, Sname : string, major: string, level: string, age: integer)
Class (Cname: string, meets_at: time, room: string, fid: integer)
Enrolled (Snum: integer, Cname: string)
Faculty (Fid: integer, Fname: string, deptid: integer)
a) List the students' numbers taught by faculty member "Mohan".
b) Find the list of faculty ids taking class in same room.
c) Find the student details of CSE major. [10]

6. What is redundancy? Explain the problems caused by redundancy with suitable example relation. [10]

OR

7.a) How to compute closure of set of functional dependency?
b) Discuss fourth normal form with illustration. [5+5]

8.a) Explain ensuring atomicity and durability properties for a transaction by DBMS.
b) Compile the compatibility matrix for multiple granularity schemes. [5+5]

OR

9.a) Elaborate the sequence of steps in buffer management for a transaction commit.
b) Explain timestamp based protocol for concurrency control. [5+5]

10.a) Make a comparison of sorted file organization and heap file organization.
b) Distinguish between extendible and linear hashing. [5+5]

OR

11. A student coding club file with Stu_ID as the key field includes records with the following Stu_ID values: 23, 65, 37, 60, 46, 92, 48, 71, 56, 59, 18, 21, 10, 74, 78, 15, 16, 20, 24, 28, 39, 43, 47, 50, 69, 75, 8, 49, 33, 38. Suppose that the search field values are inserted in the given order in a B+ -tree of order p=3 and p_{leaf}=2; show how the tree will expand and construct the final tree. [10]

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