



**B.TECH DEGREE EXAMINATIONS: MAY 2015**

(Regulation 2013)

Fourth Semester

**INFORMATION TECHNOLOGY**

U13ITT404: Database Management Systems

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. Which one of the following refers to the minimal superkey?
  - a) primary key
  - b) multiple key
  - c) candidate key
  - d) minimum key
2. .... is the actual content of the database at a particular point in time.
3. Which one of the following operation does not retain the duplicates?
  - a) union all
  - b) intersect all
  - c) except all
  - d) difference all
4. All aggregate operations except ..... ignore tuples with null values on the aggregated attributes.
5. Which of the following normal form is based on full functional dependency?
  - a) 1NF
  - b) 2NF
  - c) 3NF
  - d) BCNF
6. The average time the disk is expected to run continuously without any failure is referred as .....
7. Which of the following has an index entry for every search key value?
  - a) Dense index
  - b) Sparse index
  - c) Primary index
  - d) Secondary index
8. ....evaluation may not be possible for the operations like sort, hash-join, etc.
9. Which of the following graph can be used to test for conflict serializability of a schedule?
  - a) Wait - far graph
  - b) Precedence graph
  - c) Depth first graph
  - d) Un directed graph
10. \_\_\_\_\_memory does not survive when system crashes.

**PART B (10 x 2 = 20 Marks)**

**(Not more than 40 words)**

11. List any four drawbacks of using file systems.
12. Specify the responsibilities of storage manager.
13. What is BLOB and CLOB?
14. Tell an example for trigger.
15. Identify any two functional dependencies present in the following schema:  
inst\_dept (ID, name, salary, dept\_name, building, budget )
16. Mention the contents of data dictionary.
17. How do you overcome the deficiencies while using static hashing?
18. Define materialized evaluation
19. State the properties of ACID.
20. Give an example for conflict serializable schedule.

**PART C (5 x 14 = 70 Marks)**

**(Not more than 400 words)**

**Q.No. 21 is Compulsory**

21. a) (i) List and explain the three levels of abstraction in database. (6)  
(ii) Demonstrate the use of basic relational operators in relational algebra with examples. (8)
22. a) (i) Construct an ER diagram for storing and maintaining the hotel database. (8)  
(ii) What is a view in SQL and how is it defined? Explain with an example. (6)

**(OR)**

- b) (i) Consider the following relations for a company database application : (10)  
Employee (Eno, Name, Sex, Dob, Doj, Designation, Basic\_Pay, Dept\_No)  
Department (Dept\_No, Name)  
Project (Proj\_No, Name, Dept\_No)  
Worksfor (Eno, Proj\_No, Date, Hours)  
Write the SQL statements for the following for the above schema:  
(a) Display the number of projects in each department.  
(b) List the department name and the number of employees in each department.  
(c) List all female employees who have joined after 1990 and received basic pay more than Rs. 30,000

(d) List the number of employee who is working for the project number 6 for more than 50 hours.

(e) List the department number which under taken the project number 2.

- (ii) Define a PL/SQL function that returns the count of the number of instructors in (4) given the name of a department for the following relation:  
instructor (instructor\_name, department\_name);

23. a) Assume a sample database. Apply different normal forms to it and show the results after each normalization.

**(OR)**

- b) What is RAID? Show the different levels used in it and write the factors in choosing RAID levels.

24. a) (i) Provide the algorithm of insertion operation in B+ tree with an example. (7)  
(ii) List the various types of ordered indices and illustrate the use of multilevel indices. (7)

**(OR)**

- b) (i) Write any four algorithms that are used for selection operation in the query processing. (7)  
(ii) Demonstrate the nested-loop join algorithm and list other algorithms used to implement join operation. (7)

25. a) (i) Demonstrate the use of 2PL protocol in executing transactions and also provide its versions. (6)  
(ii) How do you prevent deadlocks while executing transactions? (8)

**(OR)**

- b) With an example, explain log based recovery mechanisms.

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