

R18

Code No: 157BD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, December-2023/January-2024

DATABASE MANAGEMENT SYSTEMS
(Electronics and Communication Engineering)

Time: 3 Hours

Max.Marks:75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

- 1.a) What is physical data independence? [2]
- b) Give example for total participation. [3]
- c) Define view. [2]
- d) What is the need of integrity constraints? [3]
- e) What is meant by spurious tuples? [2]
- f) What are the characteristics of active database? [3]
- g) What is the content of log? [2]
- h) What is the motivation for concurrent execution of transactions? [3]
- i) Define index. [2]
- j) What are the various elements in disk organization? [3]

PART – B

(50 Marks)

2. With a neat sketch, describe the overall system structure of a database management system. [10]

OR

- 3.a) Construct an ER diagram to perform conceptual database design for a college hostel management system.
- b) Write down the advantages of DBMS. [6+4]
- 4.a) What are the basic set operations in relational algebra? Explain.
- b) Illustrate enforcement of domain constraints. [5+5]

OR

- 5.a) With suitable expressions explain relational algebra operators.
- b) Write a brief note on logical data base design. [5+5]

- 6.a) Consider the following database schema to write queries in SQL:

Student(sid, sname, CGPA)

Course(Cid, Cname, credits)

Enroll(sid, Cid, NumberGrade)

i) Find the names of the students having CGPA more than 8.5.

ii) Find the course having maximum number of student enrollment.

iii) Find the students having grade 5 in DBMS.

- b) Write a brief note on BCNF. [6+4]

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OR

- 7.a) Demonstrate computation of closure of F, the set of functional dependencies. [5+5]
b) Contrast Boyce-Codd normal with fourth normal form. [5+5]
8. Make a comparison of lock based protocols and time stamp based protocol. [10]

OR

9. Describe the ARIES algorithm for crash recovery of a system with concurrent transactions. [10]
- 10.a) How to handle variable length records in a page?
b) Which operations are preferred on a heap file? Justify your answer. [5+5]

OR

11. Explain hash based indexing concept and illustrate extendible hashing as a dynamic indexing structure. [10]

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