

**III B. Tech I Semester Supplementary Examinations, Dec/Jan- 2022-23**  
**DATABASE MANAGEMENT SYSTEMS**  
 (Common to CSE and IT)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
 2. Answering the question in **Part-A** is compulsory  
 3. Answer any **THREE** Questions from **Part-B**  
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**PART -A****(22 Marks)**

1. a) Enlist and explain the properties of database management systems? [3M]
- b) Define domain, degree and cardinality? [4M]
- c) Distinguish between nested query and correlated nested query [4M]
- d) What are the problems related to decomposition? Explain. [4M]
- e) List and explain the three basic techniques to control deadlocks. [4M]
- f) What is a buffer manager? Explain its role. [3M]

**PART -B****(48 Marks)**

2. a) Illustrate the database characteristics. How they are different from File systems. [8M]
- b) Draw and explain three level architecture of database system. [8M]
3. a) Illustrate about integrity and key constraints with suitable examples? [8M]
- b) Consider following schemas: [8M]  
 Student (sid: **Integer**, Firstname: **string**, lastname: **string**, age: **Integer**)  
 Explain how to use logical operators in SQL queries?
4. a) How to represent generalization, specialization and aggregation using ER Diagrams. Explain with suitable ER diagram. [8M]
- b) Write SQL queries to implement aggregate functions by using student database? [8M]
5. a) Define normalization? What are the steps in normalization? What are the advantages of normalized relation over un normalized relation? [8M]
- b) Explain 1NF, 2NF and 3NF with suitable example. And Illustrate the problems with these normalizations. [8M]
6. a) Discuss briefly about 2PL? List and explain the types of 2PL. [8M]
- b) What is Thomas' write rule? Explain the techniques used to prevent deadlocks? [8M]
7. a) Briefly explain about cost model? Find the cost of performing scan, insert and delete operations on heap files and sorted files? [8M]
- b) Illustrate about static and dynamic hashing in file organization? [8M]