



IV B.Tech I Sem Regular End Examination, Nov/Dec 2022

Database Management Systems (PE-IV)

(ECE)

Time: 3 Hours.**Max. Marks: 70**

Note: 1. Question paper consists: Part-A and Part-B.

2. In Part - A, answer all questions which carries 20 marks.

3. 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**(10*2 Marks = 20 Marks)**

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|---|----|-----|-----|
| 1. a) Define ER diagram. | 2M | C01 | BL1 |
| b) What is an entity? | 2M | C01 | BL1 |
| c) Define candidate key. | 2M | C02 | BL1 |
| d) What is a foreign key? | 2M | C02 | BL1 |
| e) Define multi-valued dependency. | 2M | C03 | BL1 |
| f) What are problems related to decomposition? | 2M | C03 | BL1 |
| g) What is multiple granularity? | 2M | C04 | BL1 |
| h) What is an interleaved schedule? | 2M | C04 | BL1 |
| i) Define hash-based indexing. | 2M | C05 | BL1 |
| j) Distinguish between primary and secondary indexes. | 2M | C05 | BL2 |

PART- B**(10*5 Marks = 50 Marks)**

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|---|----|-----|-----|
| 2 a) Describe Levels of Abstraction in a DBMS. | 5M | C01 | BL2 |
| b) What are additional features of ER model? Explain. | 5M | C01 | BL4 |

OR

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|---|----|-----|-----|
| 3 a) What is DBMS? Explain the history of DBMS. | 5M | C01 | BL4 |
| b) Explain in detail about the data model. | 5M | C01 | BL4 |

- 4 Consider the following schema: 10M C02 BL3
 Suppliers(sid: integer, sname: string, address: string)
 Parts(pid: integer, pname: string, color: string)
 Catalog(sid: integer, pid: integer, cost: real)
 The key fields are underlined, and the domain of each field is listed after the field name. Thus sid is the key for Suppliers, pid is the key for Parts, and sid and pid together form the key for Catalog. The Catalog relation lists the prices charged for parts by Suppliers.
 Write the following queries in relational algebra, tuple relational calculus, and domain relational calculus:
 i. Find the sids of suppliers who supply every part.
 ii. Find the sids of suppliers who supply every red part.
 iii. Find the sids of suppliers who supply every red or green part.
 iv. Find the sids of suppliers who supply every red part or supply every green part.
- OR**
- 5 Write a brief introduction on views. Explain about destroying / altering tables and views. 10M C02 BL4
- 6 a) When are two sets of functional dependencies equivalent? How can we determine their equivalence? 5M C03 BL3
 b) Explain about complex integrity constraints in SQL. 5M C03 BL4
- OR**
- 7 a) Explain 1NF, 2NF and 3NF in detail with suitable examples. 5M C03 BL4
 b) Discuss about aggregation operations in SQL with examples. 5M C03 BL2
- 8 a) Write short notes on timestamp based protocol. 5M C04 BL1
 b) Discuss about validation-based protocol. 5M C04 BL2
- OR**
- 9 a) Explain about an implementation of locking. 5M C04 BL4
 b) What is two phase locking protocol? How does it guarantee serializability? 5M C04 BL1
- 10 a) Explain types of file organization in detail. 5M C05 BL4
 b) Why tree based indexing is preferred over hash based indexing? 5M C05 BL1
- OR**
- 11 a) How does an ISAM index handle search, insert, and delete? 5M C05 BL3
 b) Draw the structure of B+ tree. Explain its operations. 5M C05 BL2

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