

MCA/D06
Database Systems
Paper : MCA-301

Time : Three Hours

MM:50

Note:- Attempt Five questions in all, selecting at least One question from each unit.

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| 1(a) | Illustrate redundancy and the problems that it can cause. | 5 |
| (b) | What do you mean by the term 'controlled Redundancy'? | 3 |
| (c) | Explain the term "Integrated " with respect to a database. | 2 |
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| 2(a) | Discuss the concept of data independence. Why is it important to maintain data independence in a database? | 6 |
| (b) | It is said that the file systems lack data independence. Discuss. | 4 |
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| 3(a) | Discuss entity integrity and referential integrity constraints. Why these are considered important? | |
| (b) | Discuss the strengths of relational model of database | 3 |
| (c) | Explain the purpose of 'Domain' in relational model. | 3 |
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| 3 | Identify entities and attributes of a hospital system. Develop a logical database model(relational) for this system explaining all the assumptions made. | 10 |

UNIT – II

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| 5(a) | State and explain Boyce-Codd Normal Form. Why was it required over 3NF? | 3 |
| (b) | "BCNF" is considered to be more stronger and stricter than 3NF" Discuss | 4 |
| (c) | Discuss when a relation is in 3NF but fails to meet BCNF requirements. | 3 |
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| 6(a) | What happens to related objects like indexes, views, etc, when a table is deleted? | 3 |
| (b) | Describe basic structure and storage organization of Oracle system. | 7 |
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| 7(a) | Compare network, hierarchical and relational data models. | 4 |
| (b) | What are the important factors that influence physical database design?
Discuss how constraints and indexes are specified in SQL. | 3 (c)
3 |

UNIT-III

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| 8(a) | Discuss how serializability is used to enforce concurrency control in a database system. | 4 |
| (b) | How does the granularity control? What factors affect selection of granularity size for data items? | 6 |

- 9(a) Differentiate the following:-
Serial Schedule, Non-Serial Schedule, Serializable Schedule and Recoverable Schedule. 4
- (b) How does checkpoint helps in the process of recovery? Describe with the help of an example. 6
- 10(a) How are databases recovered from catastrophic failures? 3
- (b) Describe the different kinds of security threats to a company's database and ways a protecting the data 7