

(3 Hours)

[Total Marks: 80]

Note:

- Q1 is compulsory. Attempt any four out of remaining six questions.
- Assumptions made should be clearly stated.

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| 1 | a) | Construct an ER diagram for the online tour and travel system. Document all assumptions that you make for designing. | 10 |
| | b) | Create relational schema for the above ER diagram and normalize the same till 3NF. | 10 |
| 2 | a) | Differentiate the following (Any two) | 08 |
| | | a) Dense Index and Sparse Index | |
| | | b) Primary Key, Unique Key and Foreign Key | |
| | | c) 2PL, Strict 2PL and Rigorous 2PL | |
| | b) | Draw and explain the state diagram for the transaction in database | 07 |
| 3 | a) | Explain and draw the architecture of DBMS | 08 |
| | b) | Explain log based recovery technique in database management system | 07 |
| 4 | a) | What is deadlock? Explain the various deadlock detection and prevention techniques. | 08 |
| | b) | Explain the main responsibilities handle by DBA. | 07 |
| 5 | a) | What is timestamp protocol? Explain how it is used for concurrency control in database | 08 |
| | b) | What is Bell-LaPadula model? Explain how it is used for database security. | 07 |
| 6 | a) | What is B tree? Explain how it is used for enhancing the performance to fetch the data from database | 08 |
| | b) | Explain the heuristic approach for query optimization | 07 |
| 7 | | Write short note on the following (Any Three) | 15 |
| | | a) Aggregation | |
| | | b) Weak Entity | |
| | | c) Shadow paging | |
| | | d) Closure of attribute | |