

B.E. Sixth Semester (Information Technology) (CGS)
10741 : Database Management Systems : 6 IT 02

P. Pages : 2

Time : Three Hours



AU - 2769

Max. Marks : 80

Notes : 1. Illustrate your answer necessary with the help of neat sketches.

SECTION - A

1. a) Explain the difference between physical and logical data independence? 6
- b) With the help of an ER diagram, define and explain composite and simple attribute single and multi valued attributes and derived attributes. 7

OR

2. a) List and explain different levels of abstraction in DBMS. 6
- b) Describe the architecture of database system and explain each component in the system in detail? 7
3. a) Describe the difference in meaning between the term relation and relational schema with example. 7
- b) Let $R = (A, B)$ and $S = (A, C)$ and let $r(R)$ and $s(S)$ be relations. Write relational expressions equivalent to the following domain relational calculus expressions:
i) $\{\langle a \rangle \mid \exists b (\langle a, b, c \rangle \in r \wedge b=17)\}$ 7
ii) $\{\langle a, b, c \rangle \mid \langle a, b, \rangle \in r \wedge \langle a, c \rangle \in s\}$

OR

4. a) Explain aggregate functions using Relational Algebra. 7
- b) Explain the following terms: 7
i) Outer join operation ii) Modification of Database
5. a) Define the term Normalization why is it necessary to decompose the relation into several relations? With example state the anomalies are removed by decomposition. 7
- b) Explain Triggers with appropriate example. 6

OR

6. a) Explain with appropriate example, a relation is said to be in 1NF, 2NF and 3NF, BCNF, 4NF. 7
- b) Explain different encryption techniques. 6

SECTION - B

- | | | | |
|----|----|---|---|
| 7. | a) | Describe the steps involved in query processing. Explain the functionality of each step. | 7 |
| | b) | What is cascadeless schedule? Why is cascadeless ness of schedule desirable? Are there any circumstances under which it would be derivable to allow noncascadeless schedules? Explain your answer with example. | 6 |
| 8. | a) | What is serializability? Explain the distinction between serial schedule and serializable schedule. | 7 |
| | b) | Describe the steps involved in query processing explain the functionality of each step. | 6 |
| 9. | a) | What is serializability? Explain the distinction between serial schedule and serializable schedule. | 7 |
| | b) | List advantage and disadvantage of two-phase locking. | 6 |

OR

- | | | | |
|-----|----|---|---|
| 10. | a) | Explain ACID properties of transactions, Explain the usefulness of each. | 7 |
| | b) | What is cascadeless schedule? Why is cascadeless ness of schedules derivable? Are there any circumstances under which it would be desirable to allow non cascadeless schedules? Explain with example. | 6 |
| 11. | a) | Draw Architecture of remote backup system and explain several issues in designing a remote backup system. | 7 |
| | b) | Explain log based recovery schema different data base modification. | 7 |
| 12. | a) | If deadlock is avoided by deadlock avoidance schemes, is starvation still possible? Explain. | 7 |
| | b) | Explain timestamp based protocols with its advantages and disadvantages. | 7 |
