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Fifth Semester B.Tech. Degree Examination, September 2016
(2008 Scheme)
08.503 : DATA BASE DESIGN (R)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions :

1. Explain data independence.
2. Explain the difference between a database schema and a database state.
3. Explain the different types of attributes in ER data model.
4. How does a B– tree differ from B+ tree ? Why is a B+ tree usually preferred as an access structure to a data files ?
5. Explain select, project, union and minus operations in relational algebra.
6. Define foreign key. What is entity integrity constraint and referential integrity constraint ?
7. Describe the concept of a cursor and how it is used in Embedded SQL.
8. Explain the desirable properties of transactions.
9. Discuss the different types of failures. What is meant by catastrophic failure ?
10. Explain shadow paging.

(10×4=40 Marks)

P.T.O.



PART - B

Answer **one full** question from **each** Module.

Module - 1

11. A) Explain the concept of primary index. 10
B) Discuss the main characteristics of the data base approach and how it differs from the traditional file system. 10

OR

12. A) Discuss the main categories of data models. 8
B) A bank has many branches and a large number of customers. A customer can open different kinds of accounts with the bank. The bank keeps track of a customer by his SSN, name, address and phone number. Age is used as a factor to check whether he is a major. There are different types of loans, each identified by a loan number. A customer can take out more than one type of loan, and all branches can give loans. Loans have a duration and interest rate.
The account holder can enquire about the balance in his account. Draw an ER diagram for the bank. Make suitable assumptions and use them in showing maximum and minimum cardinality ratios. 12

Module - 2

13. A) Explain unary and binary relational operations with example. 12
B) Explain tuple relational calculus and domain relational calculus with example. 8

OR

14. A) Consider the following relation for published books :
BOOK (Book_title, Author_name, Book_type, List_price, Author_affil, Publisher)
Author_affil refers to the affiliation of author. Suppose the following dependencies exist :
Book_title -> Publisher, Book_type
Book_type -> List_price
Author_name -> Author_affil



- a) What normal form is the relation in ? Explain your answer.
- b) Apply normalization until you cannot decompose the relations further. State the reasons behind each decomposition. **14**
- B) Explain minimal set of functional dependencies. Does every set of dependencies have a minimal equivalent set ? It is always unique ? **6**

Module - 3

15. A) Explain the following terms : transaction, granularity, concurrence, dirty read, and Acid properties of transactions. **10**
- B) Explain schedule. Define the concepts of recoverable, cascade less and strict schedules, and compare them in terms of the recoverability. **10**

OR

16. A) Discuss the timestamp ordering protocol for concurrency control. How does strict time stamp ordering differ from basic time stamp ordering ? **10**
- B) Explain two-phase locking. How does it guarantee serializability ? **10**
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