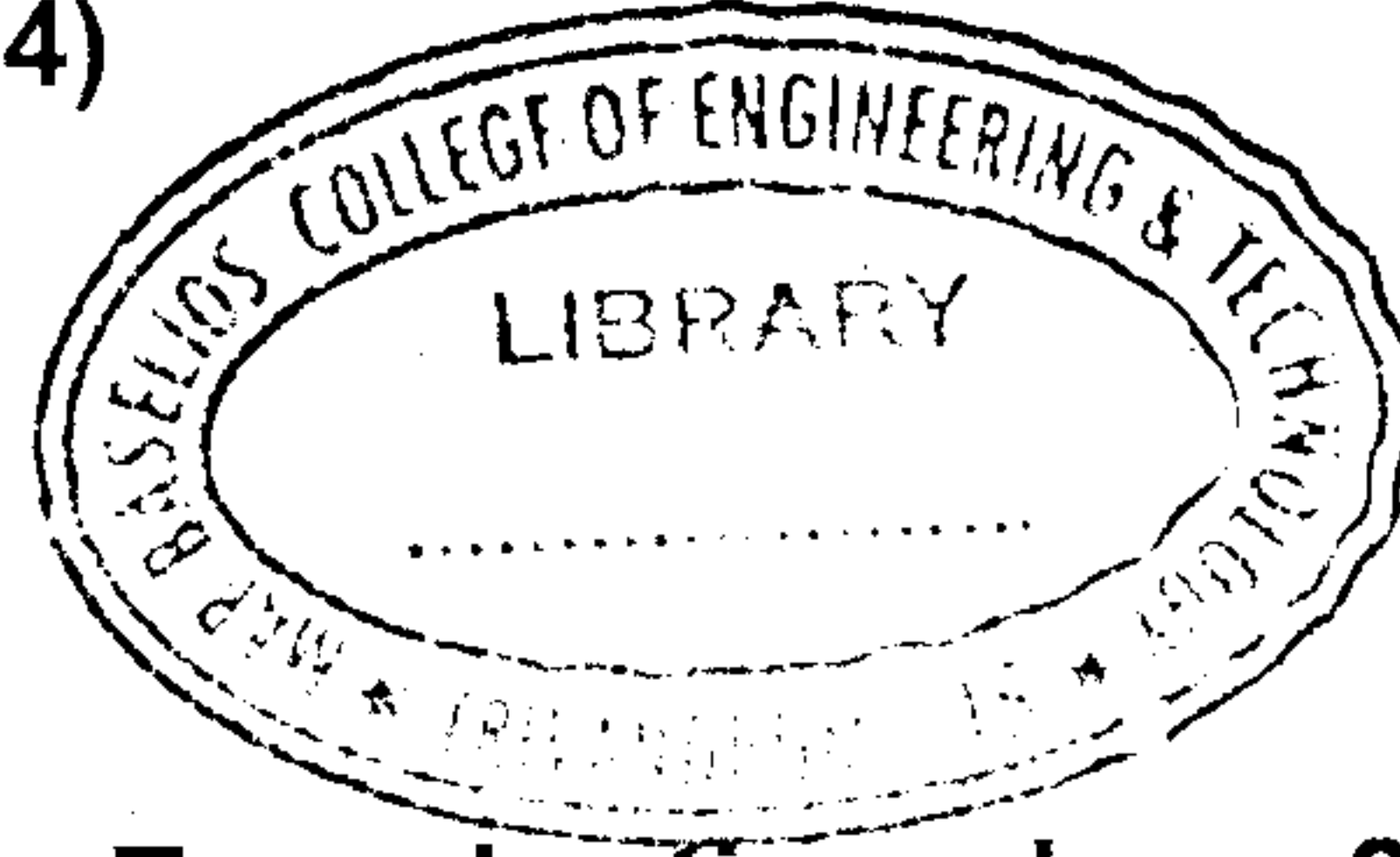


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G – 3366

Reg. No. :

Name :



**Fourth Semester B.Tech. Degree Examination, June 2019
(2008 Scheme)**

08.406 : DATABASE DESIGN (F)

Time : 3 Hours

Max. Marks : 100

PART – A

(Answer **all** questions)

1. What are the responsibilities of the DBA and the database designer?
2. Differentiate two-tier and three-tier server architecture.
3. List out the various cases where use of null value would be appropriate.
4. What is a foreign key? Give an example.
5. Explain how a One to many relationship in an ER diagram is converted into relation.
6. Write any two data manipulation language commands with example.
7. Define Multivalued dependency and fourth normal form.
8. How does disk monitoring helps in improving reliability?
9. What is partitioned hashing? List out its limitations.
10. How does two-phase locking protocol ensure serializability?

(10 × 4 = 40 Marks)

P.T.O.

PART – B

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

Module – I

11. (a) Explain the components of a database management system. (10)
- (b) A hospital offers rooms for a maximum capacity of 3 patients per room. The rooms are numbered consecutively. Doctors and Patients are registered by their first name, sur name and ID. Doctors have a certain function/special subject in the hospital. Doctors treat patients and note details about every treatment of a patient. Patients are bedded in a certain room. Pictorially represent this in a ER diagram and derive the logical database schema. (10)

OR

12. (a) Use the following database schema.

Parts(part_id, name, Color, piece_weight,price)

Orders(Order_id,customer, shipping_addr, orderdate,shipping_date)

Parts_order(order_id,parts_id,quantity, parts_price)

And write the relational algebra notation for the following

- (i) What is the total price of each order?
- (ii) List the name of all parts whose last letter is 'd' and are red in color.
- (iii) How many days does it take to ship the orders?
- (iv) Give the details of all the parts whose price is less than Rs 150 and their color is neither red nor blue. (10)
- (b) Explain the various data models to organize data in DBMS. (10)

Module – II

13. (a) Explain in detail about functional dependencies and Armstrong's axiom. (10)
- (b) Create the following tables with foreign key constraints wherever necessary.

DEPOSIT(actno,cname,bname,amount,adate)

BRANCH(bname,city)

CUSTOMERS(cname,city)

BORROW(loanno,cname,bname,amount)

Write the SQL query for the following

- (i) List all customers who are depositors but not borrowers
- (ii) List all the customers along with their amount who are either borrowers or depositors and living in city nagpur.
- (iii) List the details of all depositors living in city nagpur.
- (iv) Give the name and the amount added by 500 of the borrower whose name starts with letter M'. (10)

OR

14. (a) Write the algorithm for finding a minimal cover F for a set of functional dependencies E. A set of FDs for the relation R(A,B,C,D,E,F) is AB→C, C→A, BC→D, ACD→B, BE→C, EC→FA, CF→BD, D→E. Find a minimum cover for this set of FDs. (10)
- (b) With an example for each explain third normal form and Boyce Codd normal form. (10)



Module – III

15. (a) Describe the technique for allowing a hash file to expand and shrink dynamically. What are its advantages and disadvantages? (10)
- (b) Write an algorithm for testing the conflict serializability of a schedule. (10)

OR

16. (a) Explain the different types of transaction failures. Also brief about catastrophic failure. (10)
- (b) Describe the concurrency control mechanisms based on timestamp ordering. (10)

(3 × 20 = 60 Marks)

