LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **COMPUTER SCIENCE**

SECOND SEMESTER – **APRIL 2023**

PCS 2505 – ADVANCED DATABASE MANAGEMENT SYSTEMS

Date: 05-05-2023   Dept. No.   Max. : 100 Marks
Time: 01:00 PM - 04:00 PM

PART – A

Answer ALL questions: **(10 x 2 = 20 Marks)**

1. What is precompiler?

2. What are week entities?

3. Illustrate rename operation in relational algebra.

4. Define Primary Key.

5. What are derived attributes? Give example.

6. Define functional dependency.

7. What are cardinalities?

8. What is outer join?

9. Write the steps of processing a high level query.

10. Define Query Tree.

PART – B

Answer any FIVE questions: **(5 x 8 = 40 Marks)**

11. a) Describe the categories of data models.

OR

b) Explain the three schema architecture with a neat diagram

12. a) Describe Tuple relational calculus with examples.

OR

b) Explain Unary relational operations in Relational Algebra with examples.

13. a) Explain anomalies in database design

OR

b) Explain Boyce Codd Normal Form with example. How it differs from third normal form?

14. a) Consider the table **Products**(Batch_no, Item_code, Item_Name,Mfg_date,Exp_date , Price)
    Write queries for the following and convert them to relational Algebra.

    I.   List all the name of the products having price greater than Rs 500.
    II.   List the difference between Exp_date and Mfg_date for all items.

OR

b) Draw an E-R diagram for Customer(customerid,name,mob_no) ,

Products(Prodid,name,unit_price,exp_date) Bill_Master(Billno,

customerid,date,total_amount), Bill_Details (Billno,productid,qty_purchase)

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15. a) What are the various anomalies occur due to undesirable interleaving of transactions? Explain with example.

OR

   b) Explain state transition diagram. What will be the flow followed, when a transaction became failure?

PART – C

Answer any TWO questions: **(2 x 10 = 20 Marks)**

16. i) What are the advantages of database management system over file management system?

   ii) Describe the components of a DBMS and the architecture with a block diagram.

17. i) Explain the following relational algebra operations.

     Select, Project, Product, Union and Intersection

   ii) What are the properties of transactions? Explain with examples.

18. i) Characterize the schedules based on recoverability.

   ii) Explain 1NF, 2NF and 3NF with examples

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