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GOPAL GOVIND POY RAITURCAR COLLEGE OF COMMERCE AND ECONOMICS

FARMAGUDI, PONDA, GOA.

B.C.A. UGC-CCFUP (SEMESTER-III) REGULAR EXAMINATION OCTOBER/NOVEMBER 2024

CSA-201 DATABASE MANAGEMENT SYSTEMS

Duration: 2 hours **Marks: 60**

Instructions:

i. Please check that question paper is printed on both the sides.

ii. All questions are compulsory.

iii. Marks are mention at the right.

(Marks)(BL)(CO)

Q1) Answer the following questions. **(6*2mks)**

(i) List any two advantages of DBMS. **(BL1,CO1)**

(ii) State any two limitations of file-oriented systems. **(BL1,CO1)**

(iii) Define a Domain within the context of a relational model. **(BL1,CO1)**

(iv) What is the function of a primary key in a relational database. **(BL1,CO1)**

(v) What is functional dependency(FD)? Mention any one of the FDs. **(BL1,CO1)**

(vi) Define Normalization. **(BL1,CO1)**

Q2 A) (i) Describe the three-schema architecture of DBMS with examples. **(4) (BL2, CO1)**

(ii) Differentiate between the hierarchical and network data models. **(1) (BL2, CO1)**

(5mks)

OR

Q2 A) (iii) Explain the differences between a strong entity and a weak entity. **(3) (BL2, CO1)**

(iv) Describe the cradinality in a 1:1 raltionship with help of an example. **(2) (BL2, CO1)**

(5mks)

Q2 B) (i) Demonstrate how the relational model uses set theory operations with help of examples. **(5) (BL2, CO3)**

(ii) Discuss how a table in 3NF is different from a table in BCNF. **(2) (BL2, CO3)**

(7mks)

Q3 A) (i) Write queries to do the following: create "student" table, insert relevant data int the table and display the table. **(3) (BL3, CO4)**

(ii) How would you represent a composite attribute in an ER diagram? Give example. **(2) (BL3, CO3)**

(5mks)

OR

P.T.O.

Q3 A) (iii) Create an ER model for "Bookstore" that includes entities: Book, Author and Publisher with relevant relationships. **(3) (BL3, CO3)**

(iv) Illustrate use of the Cartesian product operation with an example. **(2) (BL3, CO2)**

(5mks)

Q3 B) (i) Develop an ER model for a "School Management" system with entities like Student, Teacher, Class and Subject. Identify possible multi-valued and derived attributes. Also identify the possible cardinality of relation between these entities. **(5) (BL3, CO3)**

(ii) Demonstrate Union operation on two tables. **(2) (BL3, CO2)**

(7mks)

Q4 A) (i) Analyze the following table and state whether it is in 2NF or 3NF. Justify your answer. **(3) (BL4, CO3)**

Order_ID	Product_ID	Product_Name	Supplier_Name
1001	2001	Laptop	ABC Suppliers

(ii) Assess one disadvantage of object-oriented data models. **(2) (BL4, CO3)**

(5mks)

OR

Q4 A) (iii) Compare total and partial dependency with examples. **(3) (BL4, CO3)**

(iv) Analyze the necessity of renaming relations using RENAME operation in relational queries. **(2) (BL4, CO3)**

(5mks)

Q4 B) (i) Analyze the following table and determine if it is in BCNF. Explain your reasoning in detail. **(5) (BL6, CO4)**

Employee_ID	Department_ID	Department_Name	Manager_ID
1001	D001	Sales	M01
1002	D002	HR	M02

(ii) Analyze the significance of INTERSECT operator in SQL. **(2) (BL5, CO2)**

(7mks)

Q5 A) (i) Assess how Full Outer Join differs from Left and Right Outer Joins, and evaluate its usefulness in real-world database applications. **(4) (BL4, CO3)**

(ii) Evaluate the impact of data redundancy on database performance and storage costs. Why is it crucial to minimize redundancy in DBMS? **(2) (BL4, CO2)**

(6mks)

OR **P.T.O.**

Q5 A) (iii) Discuss the differences between UNION and INTERSECTION operations in relational algebra. **(4) (BL2, CO3)**

(iv) Evaluate the significance of data abstraction in the three-schema architecture. **(2) (BL4, CO3)**

(6mks)

Q5 B) (i) Apply the rules of normalization to bring the following table to 3NF. **(3) (BL3, CO3)**

Teacher_ID	Teacher_Name	Class_ID	Class_Name	Class_Time
T01	Mr. Smith	C01	Math	9:00 AM
T02	Ms. Davis	C02	Science	10:00 AM

(ii) Demonstrate with the help of an example a Selection operation on a relation, retrieving tuples based on a where condition. **(3) (BL3, CO4)**

(6mks)

********************ALL THE BEST********************