MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA- 8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science **Semester: III**
Course Title: Database Management Systems **Course Code: 20CSCCDB33**
No. of Hours: 60 **LTP: 400** **Credits: 3**

Objectives

- To understand the basic concepts and the applications of database systems.
- To master the basics of SQL and construct queries using SQL.
- To analyse the relational database design principles.

Course Outcomes

CO1: Explain the basic concepts and various data models used in database design.
CO2: Analyse and apply the concept of entity- relationship model.
CO3: Apply relational database theory to create a database.
CO4: Convert the ER-model to relational tables and formulate SQL queries.
CO5: Discuss PL/SQL concepts

UNIT – I **(12 Hrs.)**

Overview of Database Management System: Introduction to data, information, database, database management systems, f ile -based system, Drawbacks of f ile - Based System, database approach, Classification of Database Management Systems, advantages of database approach, Various Data Models, Components of Database Management System, Three schema architecture of data base, costs and risks of database approach.

UNIT – II **(12 Hrs.)**

Entity- Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of e ntity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity- relationship model (EER model), generalization and specialization, IS A relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, advantages of ER modelling.

The Client server database environment: Client server architecture, 3 tier architectures.

Data and database administration: Role of data and DBA, managing data security, repositories.

UNIT – III **(12 Hrs.)**

Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra. Functional dependencies and normal forms upto 3 rd normal form.

UNIT – IV **(12 Hrs.)**

Structured Query Language: Introduction, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Join Operation, Set Operations, View, Sub Query- Programming Excercises

UNIT – V **(12 Hrs.)**

PL/SQL: Introduction, Shortcomings of SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control Procedure, Funct ion, Database Triggers, Types of Triggers - Programming Exercises.

Co-Curricular Activities

- Assignments on problem solving
- Student presentations and seminars
- Online quizzes

Prescribed Books

- Principles of Database Systems by J. D. Ullman
- Fundamentals of Database Systems by R. Elmasri and S. Navathe

Reference Books

- Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill
- Database Management Systems by Raghu Ramakrishnan, McGrawhill
- SQL: The Ultimate Beginners Guide by Steve Tale.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

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Blueprint

Subject: Computer Science **Semester: III**

Course Title: Database Management Systems **Course Code: 20CSCCDB33**

Time: 3 Hrs. **Max. Marks: 100**

SECTION – A

Answer **ALL** questions **20 x 1 = 20M**

Q. No.	UNIT	Marks Weightage	RBT LEVEL
1	I	1	**No. of questions to be set** RBT1 – 8 RBT2 – 8 RBT3 – 2 RBT4 – 2
2	I	1	
3	II	1	
4	II	1	
5	III	1	
6	III	1	
7	IV	1	
8	IV	1	
9	V	1	
10	V	1	
11	I	1	
12	I	1	
13	II	1	
14	II	1	
15	III	1	
16	III	1	
17	IV	1	
18	IV	1	
19	V	1	
20	V	1	

SECTION – B

Answer any **FOUR** questions **4 x 8 = 32M**

Q. No.	UNIT	Marks Weightage	RBT LEVEL
21	I	8	**No. of questions to be set** RBT1 – 2 RBT2 – 2 RBT3 – 1 RBT4 – 1
22	II	8	
23	III	8	
24	IV	8	
25	V	8	
26	I / II / III / IV / V	8	

SECTION – C

Answer any **FOUR** questions **4 x 12 = 48M**

Q. No.	UNIT	Marks Weightage	RBT LEVEL
27	I	12	**No. Of questions to be set** RBT1 – 2 RBT2 – 2 RBT3 – 1 RBT4 – 1
28	II	12	
29	III	12	
30	IV	12	
31	V	12	
32	I / II / III / IV / V	12	

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8
(Affiliated to Krishna University)
Model Question Paper

Subject: Computer Science **Semester: III**
Course Title: Database Management Systems **Course Code: 20CSCCDB33**
Time: 3 Hrs. **Max. Marks: 100**

SECTION – A

Answer **ALL** the questions **20 X 1 = 20 M**

1. A database where at least 25 people involved is said to be
   A. Personal Database
   B. Workgroup Database
   C. Departmental Database
   D. Enterprise Database
2. A file in the Database management system is a collection of
   A. Facts
   B. Records
   C. Information
   D. Scheme
3. Disadvantages of file processing system
   A. Program data dependence
   B. Duplication of data
   C. Limited data sharing
   D. All of the above
4. Which of the following is not true about PL/SQL decision making structures?
   A. The IF statement associates a condition with a sequence of Statements enclosed by THEN and END IF.
   B. The IF statement also adds the keyword ELSE followed by an alternative sequence of statements.
   C. The IF-THEN-ELSIF statement allows you to choose between several alternatives.
   D. PL/SQL does not have a CASE statement.
5. N-tier architecture would involve dividing an application as
   A. Logic tier
   B. Presentation tier
   C. Data tier
   D. All of the above
6. Which join returns all records when there is a match in either left table or right table?
   A. JOIN

B. INNER JOIN
C. OUTER JOIN
D. FULL JOIN

7. If your Institute is planning to design their database which suits their requirements like; maintaining a student database, employee database, purchase details, admission details, etc, what suggestion would you give to come up with a better database?
   A. To divide the database among the departments and ask the them to create individual databases.
   B. To create a database for each and every entity like student, employeeetc.by the administration staff
   C. To approach a third party.
   D. To create a single database.
8. Which rule specifies that if an entity instance is a member of one subtype, it cannot simultaneously be a member of any other subtype?
   A. Overlap rule
   B. Disjoint rule
   C. Total specialization rule
   D. Partial specialization rule
9. Removing transitive Dependencies in the present normal form and removing partial dependencies in second normal form leads to which normal form?
   A. Boyce codd Normal Form
   B. Second Normal Form
   C. Third Normal Form
   D. Fourth Normal Form
10. Which function is used to return the count of a numeric column.
    A. Count
    B. Add
    C. Sum
    D. Avg
11. _____ commands is used to save any transaction permanently into the database.
12. The number of tuples of a relation known as _____.
13. _____ data model refers to the level of data abstraction that describes exactly how the data actually stored.
14. A rectangle in ER diagram represents _____.
15. Information about data called _____.
16. The group of one or more columns used to uniquely identify each row of a relation is called _____.
17. _____is a computer language for storing, manipulating and retrieving data stored in a relational database.

18. To remove access rights or privileges on the database object _____ command is used.
19. _____command Insert data into a table.
20. _____is used to control user access in a database. it is related to security issue.

SECTION – B

Answer any **FOUR** questions **4 x 8 = 32 M**

21. Describe the advantages of DBMS.
22. Discuss the main characteristics of the database approach and specify how it differs from traditional file system
23. Specify the different operators used in SQL(any four operators).
24. State and explain codd rules.
25. Draw an ER-Diagram representing college, student and course as entities, and also represent attributes and relationships among them.
26. Explain the different datatypes of PL/SQL.

SECTION – C

Answer any **FOUR** questions **4 x 12 = 48 M**

27. What are the range of databases? Distinguish among them.
28. Briefly describe various architectures of database systems..
29. Discuss overview of ER-Model.
30. Discuss the different normal forms in normalization.
31. Apply the given queries on the table.

Customer ID	Customer Name	Contact Number	Address	City	Postal Code	Country
1	Adam	78994561	Obere St. 57	Berlin	12209	Germany
2	Ana	88463210	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antony	77621489	Mataderos 2312	México D.F.	05023	Mexico
4	James	98412536	120 Hanover Sq.	London	WA1 DP	UK

5	Thomas	9985314 6	Berguvsv ägen 8	Luleå	S-958 2	Sweden

a) Select all the customers who is from Mexico
b) Alter the table by adding a new column, email_id.
c) Update the table by changing the address of John to Ireland.
d) Selects all customers from the "Customers" table, sorted by the "Country" column
e) Selects only the DISTINCT values from the "Country" column in the "Customers" table
f) selects all fields from "Customers" where country is NOT "Germany"

32. Explain iterative statements in PL/SQL.