

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN****(Autonomous)**

(Affiliated to Andhra University, Visakhapatnam)

II B.Tech. - I Semester Regular Examinations, Nov – 2025**DATABASE MANAGEMENT SYSTEMS**

CSE (AI&ML)

1. All questions carry equal marks
2. Must answer all parts of the question at one place

Time: 3Hrs.**Max Marks: 70****UNIT-I**

1. a. Illustrate the database characteristics. How they are different from File systems.
b. Draw and explain three level architecture of database system.

OR

2. a. Discuss the roles of different types of database users and administrators
b. Explain about database system structure with neat sketch.

UNIT-II

3. a. What is ER model? What is the use of ER model? Draw any ER diagram of your choice. Specify the different entities, attributes, cardinalities and relationships in ER model
b. Describe the differences between DELETE, TRUNCATE, and DROP commands in SQL with examples.

OR

4. a. Explain the selection and projection operations in relational algebra with an example.
b. Consider the SAILOR DATABASE

Sailors (sid:string, sname:string, rating:integer, age:real)

Boats (bid:integer, bname:string, color:string)

Reserves (sid:integer, bid:integer, day:date)

Based on the above schemas answer the following queries. Based on the above schema, write the corresponding SQL queries for the following:

- (i) Find the colors of boats reserved by 'Lubber'.
- (ii) Find the names of sailors who have reserved at least one boat
- (iii) Find the names of sailors who have reserved a red or green boat
- (iv) Find the names of the sailors who have reserved both a Red boat and a Green boat.
- (v) Find names of sailors who have reserved all boats.

UNIT-III

5. a. What is a foreign key constraint? Why are such constraints important? What is referential integrity
b. What is a trigger? How to create it? Discuss various types of triggers.

OR

6. a. What is a View? How do views support logical data independence? How are views used for security? How are queries on views evaluated? Why does SQL restrict the class of views that can be updated
b. Describe grouping, aggregation, and ordering in SQL with suitable examples

UNIT-IV

7. a. Define normalization? What are the steps in normalization? What are the advantages of normalized relation over un-normalized relation?
b. Explain 1NF, 2NF and 3NF with suitable example. And illustrate the problems with these normalizations

OR

8. a. Define Multi-valued dependency. Explain the Fourth normal form with an example
b. What is functional dependency? Explain its use in database design.

UNIT-V

9. a. Describe the two-phase locking (2PL) protocol and its role in achieving serializability
b. What is a transaction? Explain the transaction life cycle and state the ACID properties.

OR

10. a. Explain deadlock handling techniques.
b. Explain timestamp-based concurrency control and how it maintains transaction order