



Sri Indu
College of Engineering & Technology
UGC Autonomous Institution
Recognized under 2(f) & 12(B) of UGC Act 1956,
NAAC, Approved by AICTE &
Permanently Affiliated to JNTUH



NAAC
NATIONAL ASSESSMENT AND
ACCREDITATION COUNCIL



HANDOUT

DATABASE MANAGEMENT SYSTEMS

II Year II Semester

**DEPARTMENT OF COMPUTER SCIENCE &
ENGINEERING (AIML)**

ACADEMIC YEAR 2025-2026



SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, NewDelhi)

(Permanently Affiliated to JNTUH, Approved by AICTE, New Delhi and Accredited by NBA, NAAC) Sheriguda Village, Ibrahimpatnam Mandal, Ranga Reddy Dist.-501510

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (AIML)

HANDOUT-INDEX

S. No	Contents
1	Vision, Mission, PEOs, POs, PSOs & Cos
2	Institution Academic Calendar
3	Department Academic Calendar
4	Subject wise
i)	Syllabus Copy
ii)	Lesson Plan
iii)	Assignment
iv)	Question Bank
v)	End Examination Questions (Model Paper)
vi)	Mid-1 & Mid-2 Questions (Model Paper)



SRIINDUCOLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, New Delhi)

(Permanently Affiliated to JNTUH, Approved by AICTE, New

Delhi and Accredited by NBA, NAAC) Sheriguda Village, Ibrahimpatnam Mandal, Ranga Reddy

Dist.-501510

VISION OF THE INSTITUTE

To be a premier institution in engineering & technology and management for competency, values and social consciousness.

MISSION OF THE INSTITUTE

IM₁: Provide high quality academic programs, training activities and research facilities.

IM₂: Promote continuous industry-institute interaction aimed at promoting employability, entrepreneurship, leadership and research aptitude among stakeholders.

IM₃: Contribute to the economic and technological development of the region, state and nation.

DEPARTMENT VISION

To develop competent engineers in the domain of Artificial Intelligence & Machine Learning for noteworthy contributions to the society

DEPARTMENT MISSION

DM₁: To strengthen academic collaborations for better exposure.

DM₂: Promote professional environment to imbibe ethical values and entrepreneurial skills

DM₃: Encourage research & development by emphasizing on innovation

DM₄: Facilitate Industry-Institute collaboration for mutual benefit

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO₁: Generate contributions towards advancements in Artificial Intelligence and Machine Learning.

PEO₂: Promote design, research and implementation of products through strong communication skills, leadership and entrepreneurial skills.

PEO₃: Apply basic principles and practices of AIML to successfully complete software related projects to meet customer business objectives and/or productively engage in research.

Program Outcomes (POs)

PO1	Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, Natural sciences, and engineering sciences.
PO3	Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Engineering tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling recognizing their limitations to solve complex engineering problems.(WK2 and WK6).
PO6	The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy,health,safety,legal framework,cultural and environment. (WK1,WK5 and WK7).
PO7	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO8	Individual and Collaborative Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO9	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO10	Project management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO11	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program specific Outcomes(PSOs)	
PSO1	Register mathematical methodology to crack problems using suitable data structures.
PSO2	Competence to design and develop software for web based and mobiles androids under real world environment.
PSO3	Skill to design the algorithms for machine learning, data compression can be used in different applications.

COURSE OUTCOMES (CO's)

Academic Year: 2025-2026

Class: II YEAR-II SEM.

Course Name: DATABASE MANAGEMENT SYSTEMS (R22CSE2214)

At the end of the course, the student will be able to

Course Outcomes (COs)	
C223.1	Gain knowledge of fundamentals of DBMS, database design.(Creating)
C223.2	Implement relational data model and relational algebra.(Apply)
C223.3	Master the basics of SQL for retrieval and management of data.(Analyze)
C223.4	Illustrate normalization techniques with simple examples.(Understanding)
C223.5	Be acquainted with the basics of transaction processing and concurrency control (Apply)
C223.6	Familiarity with database storage structures and access techniques.(Analyze)

COURSE ARTICULATION MATRIX

CO	PO												PSO2	PSO3
	PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PQ 09	PO10	PO1 1	PSO1		
C223.1	3	2	-	-	3	-	2	-	-	-	2	2	3	2
C223.2	2	3	-	2	2	-	-	-	-	-		3	3	2
C223.3	3	3	-	2	2	-	2	-	-	-		3	3	2
C223.4	2	2	3	2	-	-	2	-	-	-		3	2	1
C223.5	3	3	3	3	2	-	-	-	3	-		3	3	1
C223.6	2	3	3	3	-	-	2	-	3	-		3	3	1
C223	2.5	2.6	3	2.6	2.2	-	2	-	3	-	2	2	2.8	1.5

1. Low

2. Medium

3: High

ACADEMIC CALENDAR



Lr.No.SICET/AUTO/DAE/IInd B.Tech Academic Calendar/30/2025

B.TECH II-YEAR I-SEM & II-SEM ACADEMIC CALENDAR
(FOR ACADEMIC YEAR : 2025-26)

Academic Calendar for B.Tech – IInd Year Students (2024 - 25 Batch), BR-22 Regulation.

I – Semester

S.No.	EVENT	PERIOD	DURATION
1.	Commencement of class work.	01.08.2025 (Monday)	
2.	1 st Spell of Instructions for covering First Two and a half Units.	01.08.2025 – 07.10.2025	9 Weeks
3.	I Mid Term Examinations.	08.10.2025 – 10.10.2025	3 Days
4.	Submission of I Mid Term Examination Marks.	16.10.2025	
5.	2 nd Spell of Instructions for Remaining Two and a half Units.	13.10.2025 – 13.12.2025	9 Weeks
6.	II Mid Term Examinations.	15.12.2025 – 17.12.2025	3 Days
7.	Preparation Holidays and Practical Examinations	18.12.2025 – 27.12.2025	1 Week
8.	Submission of II Mid Term Examination Marks.	23.12.2025	
9.	I Semester End Examinations.	29.12.2025 – 10.01.2026	2 Weeks
Commencement of Class-Work for II B.Tech - II Semester 19.01.2026			

Note: No of Working/instructional days : 92

II – Semester

S.No.	EVENT	PERIOD	DURATION
1.	Commencement of class work.	19.01.2026 (Monday)	
2.	1 st Spell of Instructions for covering First Two and a half Units.	19.01.2026 – 14.03.2026	8 Weeks
3.	I Mid Term Examinations.	16.03.2026 – 18.03.2026	3 Days
4.	Submission of I Mid Term Examination Marks.	24.03.2026	
5.	2 nd Spell of Instructions for Remaining Two and a half Units.	20.03.2026 – 09.05.2026	7 Weeks
6.	Continuation of remaining 2 nd Spell of Instructions	25.05.2026 – 10.06.2026	2 Weeks
7.	II Mid Term Examinations.	11.06.2026 – 13.06.2026	3 Days
8.	Preparation Holidays and Project Evaluation.	15.06.2026 – 20.06.2026	1 Week
9.	Submission of II Mid Term Examination Marks.	18.06.2026	
10.	II Semester End Examinations.	22.06.2026 – 04.07.2026	2 Weeks

Note: No of Working/instructional days : 92

ACE

CE

DIRECTOR

PRINCIPAL

Controller of Examination
Sri Indu College of Engineering & Technology
(An Autonomous Institution Under UGC)
Sheriguda (V), Ibrahimpatnam, R.R. Dist-501510

DIRECTOR
Sri Indu College of Engineering & Technology
(An Autonomous Institution Under UGC)
Sheriguda (V), Ibrahimpatnam, R.R. Dist-501510

PRINCIPAL
Sri Indu College of Engineering & Technology
(An Autonomous Institution Under UGC)
Sheriguda (V), Ibrahimpatnam, R.R. Dist-501510.

Sign:
Dr. M.V.S.S. Giridhar

Prof. of CEA; JNTUH Nominee

Sign:
Dr. T. Venu Gopal

Prof. of CSE; JNTUH Nominee

Sign:
Dr. D. Ramesh

Prof. of CSE; JNTUH Nominee

(Copy to DAP&E and Copy to all the Dept. Heads)

DEPARTMENT CALENDAR

SRI INDU COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING(AI&ML)

DEPARTMENT CALENDAR-2025-2026(SEMESTER-II)

SUNDAY		Dec-25			1		1							Jun-26		
MONDAY	1				2		2						1			
TUESDAY	2				3	IYRCRT TRAINING	3	IYRCRT TRAINING		Apr-26			2	IYRTRAININ G		Jul-26
WEDNESDAY	3			Jan-26	4		4	HOLIDAY	1				3		1	II-II&III-II SEM ENDEXAMS
THURSDAY	4		1	NEWYEAR HOLIDAY	5		5		2	IYRTRAINING		May-26	4		2	II-II&III-II SEM ENDEXAMS
FRIDAY	5	AICLUBMEETI NG	2		6	IYRCRT TRAINING	6	IYRCRT TRAINING	3	GOODFRIDAY HOLIDAY	1	IV-IIIMID II EXAMS	5	IYRTRAININ G	3	II-II&III-II SEM ENDEXAMS
SATURDAY	6	DEPARTMENT MEETING	3		7	AICLUBMEETI NG	7		4	AICLUBMEETI NG	2	IV-IIIMID II EXAMS	6		4	II-II&III-II SEM ENDEXAMS
SUNDAY	7	HOLIDAY	4	HOLIDAY	8	HOLIDAY	8	HOLIDAY	5	HOLIDAY	3	HOLIDAY	7	HOLIDAY	5	HOLIDAY
MONDAY	8		5		9		9		6		4	IV-II PREPARATION HOLIDAYS	8		6	
TUESDAY	9		6		10	II YR CRTRTRAINING	10	II YR CRTRTRAINING	7	IYRTRAINING	5	IV-II PREPARATION HOLIDAYS	9		7	
WEDNESDAY	10		7		11		11		8		6	IV-II PREPARATION HOLIDAYS	10		8	
THURSDAY	11		8		12		12		9		7	SUBMISSION OFMID- IIMARKS	11	II-II&III- IIMIDIEXAM	9	
FRIDAY	12		9		13	II YR CRTRTRAINING	13	II YR CRTRTRAINING	10	IYRTRAINING	8	IV-II PREPARATION HOLIDAYS	12	II-II&III- IIMIDIEXAM	10	
SATURDAY	13		10	DEPARTMENTMEETING	14		14		11	DEPARTMENTMEETING	9	IV-II PREPARATION HOLIDAYS	13	II-II&III- IIMIDIEXAM	11	DEPARTMENTMEETING
SUNDAY	14	HOLIDAY	11	HOLIDAY	15	HOLIDAY	15	HOLIDAY	12	HOLIDAY	10	HOLIDAY	14	HOLIDAY	12	HOLIDAY
MONDAY	15	IV- IICOMMENCE MENTWORK	12		16	IV- IIMIDIEXAM	16	II&III- IIMIDIEXAM	13		11	IV- IISEMEXAMS	15	II-II&III- IIPREPHOILDAYS&PROJECT EVALUATION	13	
TUESDAY	16		13	PONGALHOLIDAYS	17	IV-II MID IEXAM&II YRTRAINING	17	II&III- IIMIDIEXAM,II YRTRAINING	14	DR.AMBEDKARJAYANTHOLIDAY	12	IV- IISEMEXAMS	16	II-II&III- IIPREPHOILDAYS&PROJECT EVALUATION	14	
WEDNESDAY	17		14	PONGALHOLIDAYS	18	IV- IIMIDIEXAM	18	II&III- IIMIDIEXAM	15		13	IV- IISEMEXAMS	17	II-II&III- IIPREPHOILDAYS&PROJECT EVALUATION	15	
THURSDAY	18		15	PONGALHOLIDAYS	19	IV-II2NDSPELL	19		16		14	IV- IISEMEXAMS	18	II-II&III- IIPREPHOILDAYS&PROJECT EVALUATION	16	
FRIDAY	19		16	PONGALHOLIDAYS	20	II YR CRTRTRAINING	20	II -II & III-II/ IISPELLINSTRUCTIONS	17	IYRTRAINING	15	IV- IISEMEXAMS,	19	II-II&III- IIPREPHOILDAYS&PROJECT EVALUATION	17	
SATURDAY	20		17	PONGALHOLIDAYS	21		21		18		16	IV- IISEMEXAMS	20	II-II&III- IIPREPHOILDAYS&PROJECT EVALUATION	18	
SUNDAY	21	HOLIDAY	18	HOLIDAY	22	HOLIDAY	22	HOLIDAY	19	HOLIDAY	17	HOLIDAY	21	HOLIDAY	19	HOLIDAY
MONDAY	22		19	II&III-II COMMENCEMENTWORK	23		23		20		18		22	II-II&III- IISEMEND EXAMS	20	

TUESDAY	23		20		24	SUBMISSION OF IV-II MID IMARKS, II YR TRAINING	24	SUBMISSION OF III-II MIDIMARKS	21	IIYR TRAINING	19	IIYR TRAINING	23	II-II&III- IISEMEND EXAMS	21	
WEDNESDAY	24		21		25		25		22		20		24	II-II&III-II SEM ENDEXAMS	22	
THURSDAY	25	CHRISTMAS HOLIDAY	22		26		26		23		21		25	II-II&III-II SEM ENDEXAMS	23	
FRIDAY	26	BOXINGDAY HOLIDAY	23	AICLUBMEETING	27	IIYR CRT TRAINING	27	IIYR TRAINING	24	IIYR TRAINING	22	IIYR TRAINING	26	MUHARRAM HOLIDAY	24	
SATURDAY	27	DEPARTMENT MEETING	24		28	DEPARTMENT MEETING	28		25		23		27	II-II&III-II SEM ENDEXAMS	25	
SUNDAY	28	HOLIDAY	25	HOLIDAY		HOLIDAY	29	HOLIDAY	26	HOLIDAY	24	HOLIDAY	28	HOLIDAY	26	HOLIDAY
MONDAY	29		26	REPUBLICDAY			30		27		25		29	II-II&III-II SEM ENDEXAMS	27	
TUESDAY	30		27	II&IIIYR CRT TRAINING			31	IIYR TRAINING	28	IIYR TRAINING	26	IIYR TRAINING	30	II-II&III-II SEM ENDEXAMS	28	
WEDNESDAY	31	AICLUBMEETING	28	II&IIIYR CRT TRAINING					29	AICLUBMEETING	27	BAKRIDHOLIDAY			29	
THURSDAY			29	II&IIIYR CRT TRAINING					30	IV- IIMIDIEXAMS	28				30	
FRIDAY			30	II&IIIYR CRT TRAINING							29	IIYR TRAINING			31	
SATURDAY			31	II&IIIYR CRT TRAINING							30					
SUNDAY		HOLIDAY		HOLIDAY		HOLIDAY		HOLIDAY		HOLIDAY	31	HOLIDAY		HOLIDAY		HOLIDAY

Faculty In-charge

HOD

Principal

DATABASE MANAGEMENT SYSTEMS

SYLLABUS

BR22 – B.TECH. – CSE(ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY
(An Autonomous Institution under UGC, New Delhi)

B.Tech. - II Year – II Semester

L	T	P	C
3	0	0	3

(R22CSE2214) DATABASE MANAGEMENT SYSTEMS

Course Objectives:

- To understand the basic concepts and the applications of database systems.
- To master the basics of SQL and construct queries using SQL.
- Topics include data models, database design, relational model, relational algebra, transaction control, concurrency control, storage structures and access techniques.

Course Outcomes:

- Gain knowledge of fundamentals of DBMS, database design and normal forms
- Master the basics of SQL for retrieval and management of data.
- Be acquainted with the basics of transaction processing and concurrency control.
- Familiarity with database storage structures and access techniques

UNIT - I

Database System Applications: A Historical Perspective, File Systems versus a DBMS, the Data Model, Levels of Abstraction in a DBMS, Data Independence, Structure of a DBMS

Introduction to Database Design: Database Design and ER Diagrams, Entities, Attributes, and Entity Sets, Relationships and Relationship Sets, Additional Features of the ER Model, Conceptual Design With the ER Model

UNIT - II

Introduction to the Relational Model: Integrity constraint over relations, enforcing integrity constraints, querying relational data, logical database design, introduction to views, destroying/altering tables and views, Relational Algebra, Tuple relational Calculus, Domain relational calculus.

UNIT - III

SQL: QUERIES, CONSTRAINTS, TRIGGERS: form of basic SQL query, UNION, INTERSECT, and EXCEPT, Nested Queries, aggregation operators, NULL values, complex integrity constraints in SQL, triggers and active databases.

Schema Refinement: Problems caused by redundancy, decompositions, problems related to decomposition, reasoning about functional dependencies, First, Second, Third normal forms, BCNF, lossless join decomposition, multivalued dependencies, Fourth normal form, Fifth normal form.

UNIT - IV

Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for serializability, Lock Based Protocols, Timestamp Based Protocols, Validation- Based Protocols, Multiple Granularity, Recovery and Atomicity, Log-Based Recovery, Recovery with Concurrent Transactions.

UNIT - V

Data on External Storage, File Organization and Indexing, Cluster Indexes, Primary and Secondary Indexes, Index data Structures, Hash Based Indexing, Tree based Indexing, Comparison of File Organizations, Indexes- Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM), B+ Trees: A Dynamic Index Structure.

TEXT BOOKS:

1. Database System Concepts, Silberschatz, Korth, McGraw hill, V edition. 3rd Edition
2. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill

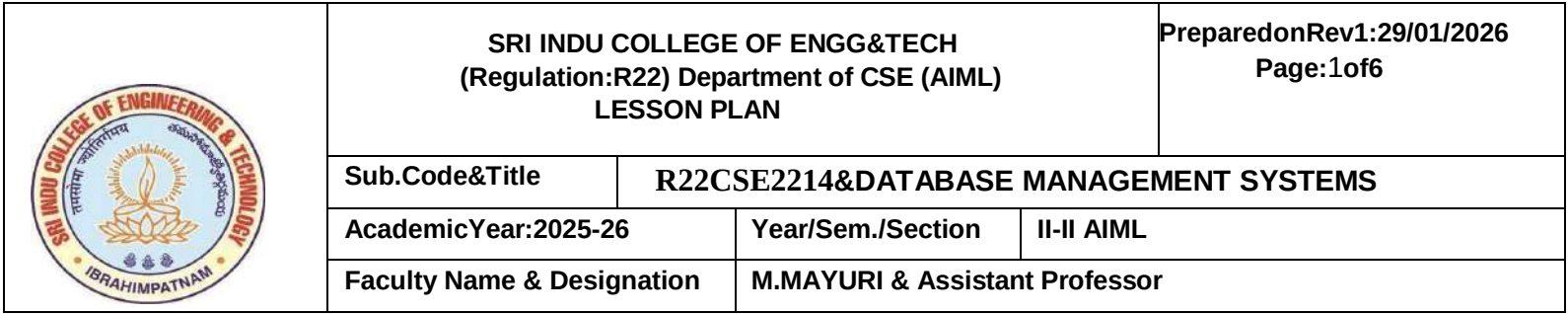
SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Page 84

BR22 – B.TECH. – CSE(ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

REFERENCE BOOKS:

1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate, Pearson Education
3. Introduction to Database Systems, C. J. Date, Pearson Education
4. Oracle for Professionals, The X Team, S.Shah and V. Shah, SPD.
5. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, PHI.
6. Fundamentals of Database Management Systems, M. L. Gillenson, Wiley Student Edition.



Unit/ Item No.	Topic(s)	Book Reference	Page(s)		Teaching Methodology	Proposed No.of Periods	Actual Date of Handling	CO/BT
			From	To				
UNIT-I								
I	DATABASE SYSTEM APPLICATIONS					13		
1.1	Introduction, Database System Applications	T1	3	5	Blackboard	01		CO1/L1
1.2	A Historical Perspective	T1	6	7	Blackboard	01		CO1/L1
1.3	File Systems versus a DBMS	T1	8	8	Blackboard	01		CO1/L1
1.4	The Data Model	T1	11	11	Blackboard	01		CO1/L1
1.5	Levels of Abstraction in a DBMS	T1	12	14	Blackboard	01		CO1/L1
1.6	Data Independence, Structure of a DBMS	T1	15	16	Chart	01		CO1/L6
1.7	Database Design and ER Diagrams	T1	26	28	Presentation	01		CO1/L6
1.8	Entities, Attributes, and Entity Sets	T1	28	29	Presentation	01		CO1/L6
1.9	Relationships and Relationship Sets	T1	29	32	Blackboard	01		CO1/L6
1.10	Additional Features of the ER Model	T1	32	40	Blackboard	02		CO1/L6
1.11	Conceptual Design With the ER Model	T1	40	45	Presentation	02		CO1/L6
	Review	Signature of the HOD/Coordinator						
Unit/ Item No.	Topic(s)	Book Reference	Page(s)		Teaching Methodology	Proposed No.of Periods	Actual Date of Handling	CO/BT
			From	To				
UNIT-II								
II	INTRODUCTION TO THE RELATIONAL MODEL					12		
2.1	Introduction to the Relational Model	T1	59	63	Blackboard	1		CO2/L1
2.2	Integrity constraint over relations	T1	63	68	Blackboard	1		CO2/L1
2.3	Enforcing integrity constraints	T1	69	73	Blackboard	2		CO2/L2
2.4	Querying relational data	T1	73	74	Blackboard	1		CO2/L2
2.5	Logical database design	T1	74	86	Presentation	1		CO2/L2
2.6	Introduction to views, destroying/altering tables and views	T1	86	91	Blackboard	2		CO2/L2
2.7	Relational Algebra	T1	102	116	Blackboard	1		CO2/L2
2.8	Tuple relational Calculus	T1	116	122	Presentation	2		CO2/L2
2.9	Domain relational calculus	T1	122	124	Presentation	1		CO2/L2
	Review	Signature of the HOD/Coordinator						



SRI INDU COLLEGE OF ENGG&TECH
(Regulation:R22) Department of CSE (AIML)
LESSON PLAN

Prepared on Rev1:29/01/2026
Page:1 of 6

Sub.Code&Title **R22CSE2214&DATABASE MANAGEMENT SYSTEMS**

Academic Year:2025-26 **Year/Sem./Section** **II-II AIML**

Faculty Name & Designation **M.MAYURI & Assistant Professor**

Unit/ Item No.	Topic(s)	Book Reference	Page(s)		Teaching Methodol ogy	Proposed No.of Periods	Actual Date of Handled	CO/BT
			From	To				
UNIT-III								
III	SQL:QUERIES,CONSTRAINTS,TRIGGERS					12		
3.1	Introduction	T1	131	132	Blackboard	1		CO2/L2
3.2	Form of basic SQL query	T1	133	141	Chart	1		CO2/L2
3.3	UNION,INTERSECT, and EXCEPT	T1	141	144	Blackboard	1		CO2/L2
3.4	Nested Queries, Aggregation operators	T1	144	162	Blackboard	1		CO2/L2
3.5	NULL values, complex integrity Constraints in SQL	T1	162	168	Blackboard	1		CO2/L2
3.6	Triggers and active databases	T1	168	171	Blackboard	1		CO2/L2
3.7	Schema Refinement : Problems caused by redundancy	T1	605	608	Blackboard	1		CO2/L2
3.8	Decompositions, Problems related to decompositions	T1	608	610	Blackboard	1		CO2/L2
3.9	Reasoning about functional dependencies	T1	611	612	Blackboard	1		CO2/L2
3.10	FIRST,SECOND,THIRD normal forms, BCNF	T1	615	619	Presentation	1		CO1/L1
3.11	lossless join decomposition, , multi-valued dependencies	T1	619	622	Presentation	1		CO2/L1
3.12	FOURTH normal form, FIFTH normal form	T1	636	640	Presentation	1		CO1/L1
	Review	Signature of the HOD/Coordinator						
Unit/ Item No	Topic(s)	Book Reference	Page(s)		Teaching Methodol ogy	Proposed No.of Periods	Actual Date of Handled	CO/BT
			From	To				
UNIT-IV								
IV	TRANSACTION MANAGEMENT					12		
4.1	Introduction to Transaction Concept, Transaction State	T1	520	520	Blackboard	1		CO3/L3
4.2	Implementation of Atomicity and Durability	T1	521	522	Chart	1		CO3/L3
4.3	Concurrent Executions, Serializability, Recoverability, Implementation of Isolation	T1	524	530	Blackboard	1		CO3/L3
4.4	Testing for serializability, Lock Based Protocols	T1	550	555	Blackboard	2		CO3/L3
4.5	Timestamp Based Protocols, Validation-Based Protocols	T1	569	572	Presentation	2		CO3/L3
4.6	Multiple Granularity, Recovery and Atomicity	T1	572	576	Presentation	2		CO3/L3



**SRI INDU COLLEGE OF ENGG&TECH
(Regulation:R22) Department of CSE (AIML)
LESSON PLAN**

Prepared on Rev 1: 29/01/2026
Page: 1 of 6

Sub.Code&Title	R22CSE2214&DATABASE MANAGEMENT SYSTEMS		
AcademicYear:2025-26	Year/Sem./Section	II-II AIML	
Faculty Name & Designation	M.MAYURI & Assistant Professor		

4.7	Log–Based Recovery	T1	582	583	Blackboard	1		CO3/L3
4.8	Recovery with Concurrent Transactions	T1	583	585	Presentation	1		CO3/L3
	Review	Signature of the HOD/Coordinator						
Unit/ Item no.	Topic(s)	Book Reference	Pages		Teaching Methodology	Proposed No.of Periods	Actual Date of Handling	CO/RBT
			from	to				
	UNIT-V							
V	OVERVIEW ON FILE ORGANIZATION AND INDEXING					11		
5.1	Data on External Storage	T1	274	275	Blackboard	1		CO4/L3
5.2	File Organization and Indexing	T1	275	276	Blackboard	1		CO4/L4
5.3	Cluster Indexes, Primary and Secondary Indexes	T1	277	278	Blackboard	1		CO4/L4
5.4	Index data Structures, Hash Based Indexing	T1	278	279	Blackboard	1		CO4/L3
5.5	Tree base Indexing, Comparison of File Organizations	T1	280	291	Presentation	1		CO4/L4
5.6	Indexes and Performance Tuning	T1	291	299	Presentation	2		CO4/L4
5.7	Intuitions for tree Indexes, Indexed Sequential Access Methods(ISAM)	T1	339	344	Blackboard	2		CO4/L3
5.8	B+ Trees :A Dynamic Index Structure	T1	344	346	Blackboard	2		CO4/L3
	Review	Signature of the HOD/Coordinator						

LIST OF TEXT BOOKS AND REFERENCES

TEXTBOOKS:

1. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, *Tata McGraw Hill* 3rd Edition
2. Database System Concepts, Silberschatz, Korth, *McGrawhill*, Vedition.

REFERENCES:

1. Database Systems design, Implementation and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate, *Pearson Education*
3. Introduction to Database Systems, C. J. Date, *Pearson Education*
4. Oracle for Professionals, The X Team, S. Shah and V. Shah, *SPD*.
5. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, *PHI*. Fundamentals of Database Management Systems, M.L. Gillenson, *Wiley Student*



SRI INDU COLLEGE OF ENGG&TECH
(Regulation:R22) Department of CSE (AIML)
LESSON PLAN

Prepared on Rev1:29/01/2026
Page:1 of 6

Sub.Code&Title	R22CSE2214&DATABASE MANAGEMENT SYSTEMS		
AcademicYear:2025-26	Year/Sem./Section	II-II AIML	
Faculty Name & Designation	M.MAYURI & Assistant Professor		

Weblinks:

1. <https://youtu.be/OWX4RvijwLw?list=PL3pGy4HtqwD3Ov1J2UBTfsLgxUzUktTAM>
2. <https://nptel.ac.in/courses/106/105/106105175/>
3. <https://youtu.be/DRSog3SA4-Y?list=PL3pGy4HtqwD3Ov1J2UBTfsLgxUzUktTAM>
4. https://youtu.be/zCa6DJTjkhg?list=PL-zLo58JCM3BkfC_wlAosP5VTLV9ObiW1
5. https://youtu.be/zCa6DJTjkhg?list=PL-zLo58JCM3BkfC_wlAosP5VTLV9ObiW1

SELF STUDY TOPICS			
S.No	Topics	Books & Journals	Course Outcome
1	Joins	Database Management Systems, 3 rd edition, Raghurama Krishnan, Gehrke	CO3
2	Deadlocks	Database Management Systems, 3 rd edition, Raghurama Krishnan, Gehrke	CO5

CONTENT BEYOND THE SYLLABUS

S.No	Topics	Proposed Actions	Date	Resource Person/Mode	Pos	PSOs
1	Integrity Constraints in Distributed Databases				PO1,PO2,PO3	PSO1,PSO2
2	Transaction Management in Object DBMS				PO1,PO2,PO3	PSO1,PSO2



SRI INDU COLLEGE OF ENGG & TECHNOLOGY
 Sheriguda(V),R.RDist.(An Autonomous Institution Under UGC)
 Department of Artificial Intelligence and Machine Learning

YEAR/SEMESTER:II YEAR /II SEM

ACADEMIC YEAR:2024 -2025

SUBJECTCODE:R22CSE2214

SUBJECT NAME: **Database Management Systems**

ASSIGNMENT-I

Batch No.	Assignment Questions	Course outcome	BT Level	Register Number
1	Sketch and explain the Structure of DBMS?	CO1	L3	23D41A6601 To 23D41A6605
	Explain different types of database users and write the functions of DBA?	CO1	L2	
	Distinguish between SuperKey,Candidate key for a Relation with example	CO2	L4	
	Demonstrate how to add a NOT NULL column to a table with example?	CO2	L1	
	Explain about complex integrity constraints over SQL?	CO3	L2	
2	Draw an ER diagram for the Following A Teacher can teach many courses. A student can enroll in many courses. A course may be a Part of many Programmes.A teacher can be mentor for many students However a Student can only have one mentor	CO1	L6	23D41A6606 To 23D41A6610
	Write short notes on history of DBMS?	CO1	L3	
	a)Discuss about the operators SELECT,PROJECT,UNION? b)Discuss about the operators renaming,Joins,Division,Setdifference.	CO2	L2	
	Discuss the reasons for converting SQL queries Into relational algebra queries before Optimization is done.	CO2	L2	
	Explain about SubQueries with Examples.	CO3	L2	
3	Explain briefly about Data models?	CO1	L2	23D41A6611 To 23D41A6615
	Discuss additional features of the ER-Models.	CO1	L1	
	a) Explain relational calculus? b) Write aTRC query to find the names of sailors who have reserved boat 103? c)Write a DRC queryto find the names of sailors who have reserved boat 103?	CO2	L4	
	Explain various data manipulation and data definition statements in SQL with examples.	CO2	L2	
	a) Explain about aggregation operators? b) Explain UNION,INTERSECT,EXCEPT operations?	CO3	L2	
4	Compare and Contrast file Systems with database systems?	CO1	L4	

	Construct an ER-Diagram for Online Shopping System with Entities like Products, Shopping order, Customers, Transaction Report and Sellers and Payment	CO1	L4	23D41A6616 To 23D41A6620
	Illustrate different set operations in Relational algebra with an example?	CO2	L3	
	Consider the following relations Sailors(sid,sname, rating, age) Boats(bid, bname, color) Reserves(sid, bid, day) Write the statements in Relational Algebra, Relational Calculus, Domain Relational Calculus and SQL for The following questions a) Find the names of sailors who have reserved a Redboat. b) Find the names of sailors who have reserved atleast two boats. c) Find the names of sailors who have reserved all boats.	CO2	L2	
	Explain about complex integrity constraints over SQL?	CO3	L2	
5	Explain different types of database users and write the functions of DBA?	CO1	L2	23D41A6621 To 23D41A6625
	Develop an ER Diagram for Banking Enterprise System	CO1	L6	
	Demonstrate how to add a NOT NULL column to a table with example?	CO2	L1	
	Discuss about Tuple Relational and Domain Relational calculus in detail.	CO2	L2	
	a) Define trigger? With examples. (insert, update, delete) b) Differentiate row level and statement level Triggers?	CO3	L1, L4	
6	Define generalization, specialization and aggregation? How it is represented in E-R Model??	CO1	L1	23D41A6626 To 23D41A6630
	Explain briefly about Data Abstraction and discuss levels of Abstraction?	CO1	L2	
	Write about Views and Perform update, alter and drop a view.	CO2	L1	
	Consider the following database schema to write queries in SQL EMP(eno, ename, ecity) COMPANY(cid, cname, ccit) WORKS- FOR(eno, cid, salary) MANAGES(eno, mno){Manager is also an employee} a) Find the names of employees working for virtusa. b) Find the company names situated in Hyderabad	CO2	L6	

	c)List the employees working/reporting to “Mohan”.			
	Explain the Following Operators in SQL with Examples SOME,IN,NOTIN,ANY.	CO3	L2	
7	Distinguish strong entity set with weak entity set?Draw an ERdiagram To illustrate weak entity set?	CO1	L4	
	Write about the conceptual design of University with an ER Diagram?	CO1	L2	
	Let R= (A,B, C),and let r1and r2 both be relations on schema R. Give an expression in the domain relational calculus that is equivalent to each of the following:a) $r1 \cup r2$ b) $r1 \cap r2$ c) $r1 - r2$	CO2	L1	23D41A6631 To
	a) Discuss about any two Integrity constraints with an example? b) Write a note on relational query language? with example?	CO2	L2	23D41A6635
	Explain about Sub Queries with Examples.	CO3	L2	
8	Write short notes on history of DBMS?	CO1	L3	
	Explain briefly about Data models?	CO1	L2	
	a. Explain relational calculus? b. Write a TRC query to find the names of sailors who have reserved boat 103? c. Write a DRC query to find the names of sailors who have reserved boat 103?	CO2	L4	23D41A6636 To
	Discuss the reasons for converting SQL queries in to relational algebra Queries before optimization is done.	CO2	L2	23D41A6640
	a. Explain about a nested query and correlated nested queries? b. Write a nested query to find the names of sailors who have reserved both a red and green boat? c. Write a nested query to find the names of sailors who have reserved All boats?	CO3	L2	
9	Distinguish strong entity set with weak entity set? Draw an ER diagram to illustrate weak entity set?	CO1	L4	
	Give details about different Object based Data Models AND Record Bases Logical Models?	CO1	L4	
	a) Explain the process of Enforcing Integrity Constraints using an Update operation? b) Explain logical database design?	CO2	L2	23D41A6641 To
	Let R=(A,B,C),and let r1and r2 both be relations on schema R. Give an expression in the domain relational calculus that is equivalent to each of the following: a) $r1 \cup r2$ b) $r1 \cap r2$ c) $r1 - r2$	CO2	L1	23D41A6645
	a) Explain about aggregation operators? b) Explain UNION,INTERSECT,EXCEPT operations?.	CO3	L2	
10	Construct an ER-Diagram for Online Shopping System with Entities like Products, Shopping order, Customers, Transaction Report and Sellers and Payment	CO1	L4	

	Draw an ER diagram for the Following A Teacher can teach many courses. A student can enroll in many courses. A course may be a Part of many Programmes.A teacher can be mentor for many students However a student can only have one mentor	CO1	L6	23D41A6646 To 23D41A6650
	a) Discuss about the operators SELECT,PROJECT,UNION? b) Discuss about the operators renaming,Joins,Division,Setdifference.	CO2	L2	
	Consider the following relations Sailors(sid,sname,rating,age) Boats(bid,bname,color) Reserves(sid,bid,day) Write the statements in Relational Algebra, Relational Calculus, Domain Relational Calculus and SQL for The following questions a)Find the names of sailors who have reserved a Red boat. b)Find the names of sailors who have reserved atleast two boats. c)Find the names of sailors who have reserved all boats.	CO2	L6	
	Explain about complex integrity constraints over SQL?	CO3	L2	
11	Write short notes on history of DBMS?	CO1	L3	23D41A6651 To 23D41A6656
	Write about the conceptual design of University with an ER Diagram?	CO1	L2	
	Illustrate different set operations in Relational algebra with an example?	CO2	L3	
	Consider the following schema: Suppliers(sid:integer, sname:string, address:string) Parts(pid:integer, pname:string,color:string) Catalog(sid:integer,pid:integer,cost:real) The Catalog relation lists the prices charged for parts by Suppliers .Write the Following queries inTuple relational calculus: 1.Find the pnames of parts for which there is Some supplier. 2.Find the snames of suppliers who supply Every part. 3.Find the pnames of parts supplied by Acme Widget Suppliers and by no one else. 4.For each part find the sname of the Suppliers Who chargers the most for that part	CO2	L3	
	Explain the Following Operators in SQL with Examples SOME,IN,NOTIN,ANY	CO3	L2	
12	Discuss additional features of the ER-Models.	CO1	L1	23D41A6657 To 23D41A6661
	Write about the conceptual design of University with an ER Diagram?	CO1	L2	
	Write about Views and Perform update, alter and drop a view.	CO2	L1	
	Discuss the reasons for converting SQL queries Into relational algebra queries before Optimization is done	CO2	L2	
	Explain about Sub Queries with Examples.	CO3	L2	

13	Distinguish strong entity set with weak entity set? Draw an ER diagram to illustrate weak entity set?	CO1	L4	23D41A6662 To 24D41A6603
	Explain briefly about Data models?	CO1	L2	
	Illustrate different set operations in Relational algebra with an example?	CO2	L3	
	Demonstrate how to add a NOT NULL column to a table with example?	CO2	L1	
	a) Explain about aggregation operators? b) Explain UNION,INTERSECT,EXCEPT operations?.	CO3	L2	

Faculty

HOD



SRI INDU COLLEGE OF ENGG & TECHNOLOGY
 Sheriguda(V), R.RDist.(An Autonomous Institution Under UGC)

Department of
ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
YEAR/SEMESTER: II YEAR / II SEM **ACADEMIC YEAR: 2024 -2025**
SUBJECT CODE: R22CSE2214 **SUBJECT NAME: Database Management Systems**

ASSIGNMENT - II

S.NO	Assignment Questions	Course outcome	BT Level	Register Number
1	1. Explain about complex integrity constraints over SQL?	CO4	L1	23D41A6601 To 23D41A6605
	2. Explain ACID properties and Illustrate them through examples?	CO5	L2	
	3. Discuss about time stamp method protocol?	CO5	L2	
	4. Discuss the Intuitions for tree Indexes?	CO6	L1	
	5. Write about fixed-length representation in detail?	CO6	L4	
2	1. Define Redundancy? And how does it address redundancy? Discuss the problems that may be caused by redundancy?	CO4	L3	23D41A6606 To 23D41A6610
	2. Discuss about time stamp method protocol?	CO5	L3	
	3. Describe the shadow paging recovery technique. Under what circumstances does it not require a log ?	CO5	L2	
	4. Enlighten about primary and secondary Indexes?	CO6	L4	
	5. Compare and Contrast Extendible Hashing with Linear Hashing?	CO6	L4	
3	1. Illustrate Multivalued dependencies and Fourth normal form with example?	CO4	L1	23D41A6611 To 23D41A6615
	2. How the terms fuzzy check pointing and recovery algorithm are used in advanced recovery techniques?	CO5	L2	
	3. What is the functionality of lock manager and transaction manager?	CO5	L3	
	4. Give a brief note on File organization and Indexing?	CO6	L6	
	5. Compare and Contrast Extendible Hashing with Linear Hashing?	CO6	L4	
4	1. What is normalization? Explain the process of normalization with suitable examples.	CO4	L1	23D41A6616 To 23D41A6620
	2. Illustrate Concurrent execution of transaction with examples?	CO5	L1	
	3. What is a log in the content of DBMS? How does check pointing eliminate some of the problems associated with log based recovery?	CO5	L2	
	4. Make clear Multi-key file organization in detail?	CO6	L5	
	5. Discuss the Index Data structure?	CO6	L2	

5	1. Explain About properties of decomposition ?	CO4	L2	23D41A6621 To 23D41A6625
	2. Discuss about time stamp method protocol?	CO5	L2	
	3. Explain different types of Advanced Recovery Techniques?	CO5	L1	
	4. Explain in detail about ISAM?	CO6	L2	
	5. Enlighten about primary and secondary Indexes?	CO6	L4	
6	1. List and Explain the inference rules for Functional dependencies?	CO4	L2	23D41A6626 To 23D41A6630
	2. Discuss the failures that can occur with loss of Non-volatile storage?	CO5	L2	
	3. Make clear about serializability? Discuss about conflict serializability?	CO5	L2	
	4. Compare the hash based Indexing and Tree base Indexing?	CO6	L2	
	5. Explain B+ trees? Discuss about this Dynamic Index Structure?	CO6	L2	
7	1. Explain TRIGGER? With example.	CO4	L1	23D41A6631 To 23D41A6635
	2. Make clear about serializability? Discuss about conflict serializability?	CO5	L2	
	3. Write in detail about Remote Backup systems?	CO5	L4,L1	
	4. Give a brief note on File organization and Indexing?	CO6	L6	
	5. Discuss the Intuitions for tree Indexes?	CO6	L2	
8	1. a) Explain about a nested query and correlated nested queries? b) Write a nested query to find the names of sailors who have reserved both a red and green boat? c) Write a nested query to find the names of sailors who have reserved all boats?	CO4	L4	23D41A6636 To 23D41A6640
	2. Discuss how do you recover from Concurrent transactions?	CO5	L4,L1	
	3. Write about 2-phase locking and lock granularity?	CO5	L2	
	4. What is over flow page? With a neat diagram, briefly describe ISAM Index structure?	CO6	L2	
	5. Write about fixed-length representation in detail?	CO6	L4	
9	1. Explain About properties of decomposition ?	CO4	L2	23D41A6641 To 23D41A6645
	2. Describe the shadow paging recovery technique. Under what circumstances does it not require a log ?	CO5	L2	
	3. How the terms fuzzy check pointing and recovery algorithm are used in advanced recovery techniques?	CO5	L2	
	4. Compare I/O costs for all File Organizations?	CO6	L4	
	5. Explain B+ trees? Discuss about this Dynamic Index Structure?	CO6	L2	
10	1. Explain about aggregation operators?	CO4	L1	

	2. Write about 2-phase locking and lock granularity?	CO5	L2	23D41A6646 To 23D41A6650
	3. Discuss in detail Multiple Granularity? Explain Buffer Management?	CO5	L4	
	4. Which of the three basic file organizations would you choose for a file where the most frequent operations are as follows, i. Search for records based on a range of field values. ii. Perform insert and scans where the order of records does not matter. iii. Search for a record based on a particular field value.	CO6	L2	
	5. Give a brief note on File organization and Indexing?	CO6	L6	
11	1. Define Redundancy? And how does it address redundancy? Discuss the problems that may be caused by redundancy?	CO4	L3	23D41A6651 To 23D41A6656
	2. What is a log in the content of DBMS? How does check pointing eliminate some of the problems associated with log based recovery?	CO5	L2	
	3. Discuss about time stamp method protocol?	CO5	L3	
	4. Illustrate insertion and deletion of an element in B+ trees with example?	CO6	L6	
	5. Discuss the difference between index sequential and hashed file organizations. Compare their storage and access efficiencies. List the applications where each of the file organization is suitable?	CO6	L2	
12	1. List and Explain the inference rules for Functional dependencies?	CO4	L2	23D41A6657 To 23D41A6661
	2. Discuss the failures that can occur with loss of Non-volatile storage?	CO5	L2	
	3. Explain different types of Advanced Recovery Techniques?	CO5	L1	
	4. Discuss the Intuitions for tree Indexes?	CO6	L1	
	5. Discuss the Index Data structure?	CO6	L2	
13	1. Illustrate Multivalued dependencies and Fourth normal form with example?	CO4	L1	23D41A6662 To 24D41A6603
	2. Discuss about time stamp method protocol?	CO5	L2	
	3. Illustrate Concurrent execution of transaction with examples?	CO5	L1	
	4. Give a brief note on File organization and Indexing?	CO6	L6	
	5. Explain B+ trees? Discuss about this Dynamic Index Structure?	CO6	L2	

FACULTY

HOD

	SRI INDU COLLEGE OF ENGG&TECH (Regulation:R22) Department of CSE (AIML) LESSON PLAN			PreparedonRev1:29/01/2026 Page:1of6
	Sub.Code&Title	R22CSE2214&DATABASE MANAGEMENT SYSTEMS		
	AcademicYear:2025-26	Year/Sem./Section	II-II AIML	
	Faculty Name & Designation	M.MAYURI & Assistant Professor		

QUESTION BANK WITH BLOOMS TAXONOMY LEVEL (BTL)
 (1.Remembering2.Understanding3.Applying4.Analyzing5.Evaluating6.Creating)

UNIT-1:DATABASESYSTEMAPPLICATIONS			
	Multiple choice Questions	BTLevel	Course Outcome
1C-1	In the relational modes, cardinality is termed as: (A)Number of tuples (B)Number of attributes. (C)Number of tables. (D)Number of constraints	L1	CO1
1C-2	The view of total database content is (A)Conceptual view. (B)Internal view. (C)External view. (D)Physical View.	L2	CO1
1C-3	Architecture of the database can be viewed as (A)two levels (B)four levels. (C)three levels (D)one level.	L3	CO1
1C-4	An entity set that does not have sufficient attributes to for primary key is a (A)strong entityset. (B)weak entityset. (C)simple entityset. (D)primary entityset.	L2	CO1
1C-5	In an E-R diagram attributes are represented by (A)rectangle (B)square. (C)eclipse (D)triangle.	L2	CO1

1C-6	The relational model feature is that there (A) Is no need for primary key data. (B) Is much more data independence than some other database models. (C) Are explicit relationships among records. (D) Are tables with many dimensions	L2	CO1
1C-7	Conceptual design (A) is a documentation technique. (B) needs data volume and processing frequencies to determine the size of the database. (C) involves modeling independent of the DBMS. (D) is designing the relational model.	L2	CO1
1C-8	The DBMS language component which can be embedded in a program is (A) The data definition language (DDL). (B) The data manipulation language (DML). (C) The data base administrator (DBA). (D) A query language.	L4	CO1
1C-9	A relational database developer refers to a record as (A) a criteria (B) a relation. (C) a tuple (D) an attribute	L4	CO1
1C-10	In a Hierarchical model records are organized as (A) Graph. (B) List. (C) Links. (D) Tree.	L2	CO1
1C-11	The way a particular application views the data from the data base that the application uses is a (A) module. (B) relational model. (C) schema. (D) subschema.	L5	CO1

1C-12	Data independence means (A) Data is defined separately and not included in programs. (B) Programs are not dependent on the physical attributes of data. (C) Programs are not dependent on the logical attributes of data. (D) Both (B)and(C).	L2	CO1
1C-13	E-R model uses this symbol to represent weak entityset? (A)Dotted rectangle. (B)Diamond (C)Doubly out lined rectangle (D)None of these	L4	CO1
1C-14	The conceptual model is (A)dependent on hardware. (B)dependent on software. (C)dependent on both hardware and software (D)independent of both hardware and software	L2	CO1
1C-15	What is a relationship called when it is maintained between two entities? (A)Unary (B)Binary (C)Ternary (D)Quaternary	L4	CO1
	Fill in the blanks		
1F-1	_____Can help us detect poor E-R design.	L2	CO1
1F-2	The possible inputs for the database are collected by_____	L2	CO1
1F-3	The process of identifying the object and relationships between them is called_____	L1	CO1
1F-4	Graphically representations of the relationship between the entities are_____	L2	CO1
1F-5	The entity is represented in the E-R diagram_____	L1	CO1
1F-6	The attribute is represented in the E-R diagram by_____	L1	CO1
1F-7	The diamond shape is represented in an E-R diagram_____	L1	CO1
1F-8	In the ER Dmodel the entity related to itself is referring to_____	L4	CO1

1F-9	The entity and their relationship in an E-R diagram is represented by_____	L4	CO1
1F-10	Person,Parts,chair,table,teacher are example of_____	L4	CO1
1F-11	The example of a one-to-one relationship is_____	L2	CO1
1F-12	The representation of an optional relationship is_____	L4	CO1
1F-13	The major objective of the Database designs is_____	L4	CO1
1F-14	The_____ component of the physical database design refers to the correctness and consistency of data.	L1	CO1
1F-15	The database organizing on secondary storage is related to_____	L2	CO1
Match the following			
1M-1	(1) Database (A)Raw facts (2) Data (B)Creating and managing databases (3) Information (C)Collection of interrelated data (4) DBMS (D)Processed data	L1	CO1
1M-2	1) Advantages of DBMS (A)Authorised users 2) Data integrity (B)Data is accurate and consistent 3) Data Security (C)Reducing Data Redundancy 4) Backup and Recovery (D)Restores the database	L4	CO1
1M-3	1) CHAR (A)It is used for storing integer values 2) VARCHAR (B)It can represent numbers 3) DECIMAL (C)Holds a variable-length string 4) INT (D)Holds a fixed-length string	L1	CO1
1M-4	1) RDBMS (A)storage unit in a Relational database 2) Table (B)Collection of interrelated data 3) Database designer (C)Tuple 4) Record (D)Decides the name of the table and Columns	L1	CO1
1M-5	1) Data Model (A)Represents data in Table format 2) Relational Data Model (B)Logical structure of database 3) Hierarchical Data Model (C)Represents data in Graph format 4) Relational data model (D)Represents data in Tree format	L2	CO1
5 Marks Questions			
1D-1.	Compare and Contrast file Systems with data base systems?	L4	CO1
1D-2.	Write short notes on history of DBMS?	L3	CO1
1D-3.	Explain briefly about Data Abstraction and discuss levels of Abstraction?	L2	CO1
1D-4.	Sketch the Structure of DBMS?	L3	CO1
1D-5.	Discuss additional features of the ER-Models.	L1	CO1
1D-6.	Draw an ER diagram for the Following A Teacher can teach many courses. A student can enroll in many courses. A course may be a Part of many Programmes .A teacher can be mentor for many students However a student can only have one mentor	L6	CO1

1D-7.	Distinguish strong entity set with weak entityset?Draw an ERdiagram to illustrate weak entityset?	L4	CO1
1D-8	Explain different types of database users and write the functions of DBA?	L2	CO1
1D-9	Construct an ER-Diagram for Online Shopping System with Entities like Products,Shopping order,Customers,Transaction Report and Sellers and Payment	L4	CO1
1D-10	Explain briefly about Data models?	L2	CO1
1D-11	Define generalization ,specialization and aggregation?How it is represented in E-RModel??	L1	CO1
1D-12	Write about the conceptual design of University with an ERDiagram?	L2	CO1
1D-13	Give details about different Objectbased DataModels AND Recordbases LogicalModels?	L4	CO1
1D-14	Develop an ERDiagram for Banking Enterprise System	L6	CO1
1D-15	Construct an ERdiagram for HOSPITAL Management system with the following PATIENTS(Pssn,Lastname,Firstname,PhoneNo,Sex,DOB,Address) DOCTORS(Dssn,Lastname,Firstname,PhoneNo,Sex,DOB,Address) BEDS(RoomNo,BedNo,Type,Status,Price) ACCOUNTS(DateIn,DateOut,Amount),Show all the types of Entities and Attributes Along with relevant Relationships,Participation constraints and Cardinality ratios.	L6	CO1
1D-16	Explain the architecture of Database Management Sysytem with a neat diagram	L2	CO1
1D-17	Explain about the steps involved in design of a database	L4	CO1

UNIT-II:INTROUCTIONTOTHERELATIONMODEL			
	MultiplechoiceQuestions	BTLevel	Course Outcome
2C-1	Relational calculus is a A)Procedural language .(B)Non-Procedural language. C)Datadefinition language. (D)Highlevel language	L1	CO2
2C-2	Cartesian product in relational algebra is A)a Unary operator. (B)a Binary operator. C)a Ternary operator. (D)not defined.	L1	CO2
2C-3	Incase of entity integrity,the primary key may be A)not Null (B)Null C)both Null & notNull. (D)any value.	L4	CO2
2C-4	In tuple relational calculus $P1 \otimes P2$ is equivalent to A)- $P1 \cup P2$ (B) $P1 \cup P2$ C) $P1 \cap P2$ (D) $P1 \setminus P2$	L3	CO2

2C-5	Relational Algebras (A) Data Definition Language. (B) Meta Language (C) Procedural query Language (D) None of the above	L1	CO2
2C-6	Key to represent relationship between tables is called (A)Primary key (B)Secondary Key (C)Foreign Key (D)None of these	L2	CO2
2C-7	- -----produces the relation that has attributes of R1andR2 (A)Cartesian product (B)Difference (C)Intersection (D)Product	L1	CO2
2C-8	In a relation (A)Ordering of rows is immaterial (B)No two rows are identical (C)(A)and(B)both are true (D)None of these	L2	CO2
2C-9	A view in a relational database: A)Stores data physically B)Is a virtual table derived from other tables C)Is only accessible by the database administrator D)Cannot perform operations like SELECT and JOIN	L2	CO2
2C-10	Which of the following is a foreign key constraint? a)Referential integrity b)Domain integrity c)Entity integrity d)All	L4	CO2
2C-11	Which of the following is not a basic operation in relational algebra? A)Union B)Intersection C)Difference D)Joining	L2	CO2

2C-12	A primary key if combined with a foreign key creates (A) Parent-Child relationship between the tables that connect them. (B) Manytomany relationship between the tables that connect them. (C) Network model between the tables that connect them. (D) None of the above	L6	CO2
2C-13	The database schema is written in A)DQL (B)DML (C)DDL (D)DCL	L2	CO2
2C-14	Represents the overall design of database. (A)Instance (B)Schema (C)Metadata (D)Datadictionary	L2	CO2
2C-15	Which of the following are the types of integrity constraints enforced by RDBMS? a)Entity integrity b)Domain integrity c)Referential integrity d)All	L2	CO2
Fill in the blanks			
2F-1	Tables with rows and columns can be viewed as_____	L1	CO2
2F-2	Row in a table also known as_____	L2	CO2
2F-3	Column in a table is contains_____	L2	CO2
2F-4	SQL is primarily used for querying_____data.	L2	CO2
2F-5	An SQL____is a virtual table,whose contents are based on the SQL statement's results	L4	CO2
2F-6	The relational algebra a query language is____	L2	CO2
2F-7	In RelationalAlgebra,queries are performed using_____.	L2	CO2
2F-8	Using the select operation,you can select_____that satisfy certain criteria	L4	CO2
2F-9	Select operation is denoted by_____	L2	CO2
2F-10	Propositional logic is conducted using p as a formula,using connectors like_____	L4	CO2
2F-11	A list of the attributes we wish to appear in the result is displayed in____operation.	L4	CO2
2F-12	What is Project Operation denoted by_____	L2	CO2
2F-13	Tuple relational calculus operates on individual_____of relations.	L3	CO2
2F-14	Domain relational calculus operates on_____.	L1	CO2
2F-15	Union operation is denoted by_____	L1	CO2

Match the following			
2M-1	1)PrimaryKey (A)Combination of multiplecolumns. 2)ForeignKey (B)Itcontains Uniquevalues 3)CompositeKey (C)Set of attributes 4)Superkey (D)Referentialkey	L2	CO2
2M-2	(1) DDL (A)Insert,Delete,Update (2) DCL (B)Select (3) DML (C)Grant,Revoke (4) DQL (D)Create,Drop,Alter	L1	CO2
2M-3	1)DROP (A)To add new attribute to the existing table 2)DELETE (B)Deletes complete data from the table 3)TRUNCATE (C)Deletes complete structure of the table 4)ADD (D)Deletes rows of the table	L1	CO2
2M-4	1)Selection (A)virtual table 2)Projection (B)Changing name of the relation 3)Rename (C)Selects the required tuples from the relation 4)View (D)Selects column data from the relation	L1	CO2
2M-5	1)INNERJOIN (A)Retrieves all records matching in right table 2)RIGHTJOIN (B)Retrieves all the records matching in left or right tables 3)LEFTJOIN (C)Retrieves records matching in both tables 4)OUTERJOIN (D)Retrieves all records from right table and matching in left table	L1	CO2
5-MARKSQUESTIONS			
2D-1.	Illustrate different set operations in Relational algebra with an example?	L3	CO2
2D-2.	Discuss the reasons for converting SQL queries in to relational algebra queries before optimization is done.	L2	CO2
2D-3.	Write about Views and Perform update,alter and drop a View.	L1	CO2
2D-4.	Distinguish between SuperKey,Candidatekey for a Relation with example	L4	CO2
2D-5.	Explain various data manipulation and data definition statements in SQL with examples	L2	CO2
2D-6.	a) Discuss a bout the operators SELECT,PROJECT,UNION? b) Discuss about the operators renaming,Joins,Division,Setdifference.	L2	CO2
2D-7.	Let R = (A, B, C), and let r1 and r2 both be relations on schema R. Give an expression in the domain relational calculus that is equivalent to each of the following: a) $r1 \cup r2$ b) $r1 \cap r2$ c) $r1 - r2$	L1	CO2
2D-8	Demonstrate how to add a NOTNULL column to a table with example?	L1	CO2
2D-9	Consider the following relations Sailors(sid,sname,rating,age) Boats(bid,bname,color) Reserves(sid,bid,day) Write the statements in RelationalAlgebra,RelationalCalculus,DomainRelationalCalculus and SQL for the following questions a)Find the names of sailors who have reserved a Redboat. b)Find the names of sailors who have reserved atleast two boats. c)Find the names of sailors who have reserved all boats.	L6	CO2
2D-10	a. Explain relationalcalculus? b. Write a TRC query to find the names of sailors who have reserved boat 103? c. Write a DRC query to find the names of sailors who have reserved boat 103?	L4	CO2

2D-11	Consider the following database schema to write queries in SQL EMP(eno,ename,ecity) COMPANY(cid,cname,ccit) WORKS- FOR(eno,cid,salary) MANAGES(eno,mno){Managerisalsoanemployee} a) Find the names of employees working for virtusa. b) Find the company names situated in Hyderabad c) List the employees working /reporting to “Mohan”.	L6	CO2
2D-12	a) Discuss about any two Integrity constraints with an example? b) Write a note on relational query language? with example?	L2	CO2
2D-13	a) Explain the process of Enforcing Integrity Constraints using an Update operation? b) Explain logical database design?	L2	CO2
2D-14	Discuss about Tuple Relational and Domain Relational calculus in detail.	L2	CO2
2D-15	Consider the following schema: Suppliers(sid:integer,sname:string,address:string) Parts(pid:integer,pname:string,color:string) Catalog(sid:integer,pid:integer,cost:real) The Catalog relation lists the prices charged for parts by Suppliers .Write the following queries in Tuple relational calculus: 1. Find the pnames of parts for which there is some supplier. 2. Find the snames of suppliers who supply every part. 3. Find the pnames of parts supplied by Acme Widget Suppliers and by no one else. 4. For each part find the sname of the Suppliers who charge the most for that part	L3	CO2
2D-16	What are the statements in sql for destroying and altering tables	L2	CO2
2D-17	What is a Primary key and Foreign key? Explain in detail	L2	CO2
2D-18	What is join operation in Relational algebra? What are the different types of join?	L3	CO2
2D-19	Write Relational Algebra Queries for the following (for Sailors Database) Sailors(sid, sname, rating, age), Boats(bid, bname, color), Reserves(sid, bid, day) (i) Find the Sailor Id's with age over 20 and who have not reserved a red boat. (ii) Find the names of Sailors who reserved boat 103.	L3	CO2

	SRIINDUCOLLEGE OF ENG&TECH QUESTION BANK (Regulation:R22) Department of CSE ,IT,CSIT,AI ML,CS,AIDS &DS			(Regulation:R22)
	Sub.Code&Title	(R22CSE2214) DATABASE MANAGEMENT SYSTEMS		
	Academic Year:2025-26		Year/Sem.	II-II/AI ML
	Faculty Name&Designation		Mrs.MAYURI ,Asst.Professor	

UNIT-III SQL			
	Multiple choice Questions	BT Level	Course Outcome
3C-1	What does UNION operator do in a SQL Server statement? a) Bring common data from the listed tables. b) Bring data which is not common from the listed tables. c) Bring all data from the listed tables. d) Bring all distinct from the listed tables	L2	CO3
3C-2	A ---- is a special kind of a store procedure that executes in response to certain action on the table like insertion, deletion or updation of data a) Procedures b) Triggers c) Functions d) one of the mentioned	L2	CO3
3C-3	The default extension for an Oracle SQL* Plus file is: a).txt b).pls c).ora d).sql	L4	CO3
3C-4	Which of the following is not a class of constraint in SQL Server? a) NOT NULL b) CHECK c) NULL d) UNIQUE	L2	CO3
3C-5	Which one is correct syntax for applying UNION operator? a) SELECT column_name(s) FROM table_name1 UNION table_name2 b) SELECT column_name(s) FROM table_name1 UNION SELECT column_name(s) FROM table_name2 c) UNION SELECT column_name(s) FROM table_name1 SELECT column_name(s) FROM table_name2 d) SELECT FROM table_name1 AND table_name2	L4	CO3

3C-6	Which of the following SQL functions can be used to find the average value of a column? A)COUNT C)AVG B)MAX D)SUM	L2	CO3
3C-7	Point out the correct statement. a) CHECK constraints enforce domain integrity b) UNIQUE constraints enforce the uniqueness of the values in a set of columns c) In a UNIQUE constraint, not rows in the table can have the same value for the columns d) All of the mentioned	L4	CO3
3C-8	Which of the following constraint does not enforce uniqueness? a) UNIQUE c)Foreignkey b)Primarykey d)None of the mentioned	L4	CO4
3C-9	Observe the following query and choose the correct option SELECT DISTINCT name FROM student WHERE ID IS NOTNULL; a) The query is syntactically wrong b) The query gives all the possible student names where a finite value exists for ID c) The query gives the names of the students that have a null ID and it also excludes identical names d) The query gives the student names where a finite value exists for ID and it excludes Identical names	L4	CO4
3C-10	Purpose of foreign n key constraint in SQL Server is _____ a) FOREIGNKEY constraints identify and enforce the relationships between tables b) A foreign key in one table points to a candidate key in another table c) You can not insert a row with a foreign key value ,except NULL ,if there is no candidate key with that value d) None of the mentioned	L2	CO3
3C-11	Which of the following is not a foreign key constraint? a)NOACTION b)CASCADE c)SETNULL d)All of the mentioned	L2	CO4
3C-12	Which of the following normal form deals with the a nomal you multivalue dependency? a)1NF b)2NF c)4NF d)5NF	L4	CO4
3C-13	What is the function of the except operation? a) It excludes all the results present in both the queries b) It includes the resultsof the second query but excludes the results of the first query c) It includes the results of the first query but excludes the results of the second query d) It includes all the results of both queries but removes duplicates	L2	CO4

3C-14	How can we get all records(redundant as well as non-redundant) from union operator? a) Using 'ALL' operator with UNION. b) Using 'Distinct' operator with UNION. c) We get all records(redundant as well as non-redundant) with UNION operator by default. d) None of the above	L3	CO4
3C-15	What is the function of the intersect operation? a) It returns the intersection of the results of any two different queries b) It returns the intersection of the results of two different queries which have the same set of attributes in the select clause c) It returns the intersection of the results of two different queries which have the same condition in the where clause d) None of the mentioned	L2	CO3
Fill in the blanks			
3F-1	Constraints can be applied on _____	L3	CO3
3F-2	_____ and _____ constraints form the core of the PRIMARY KEY constraint.	L2	CO3
3F-3	A Subquery is an SQL expression that is placed _____ another SQL statement.	L2	CO3
3F-4	With which of the following statement(s) can the SQL subqueries be used _____	L2	CO3
3F-5	Which of the ----- clause cannot be used in SQL subqueries	L2	CO3
3F-6	To get a record from one table, which is not present in another table, we can use the clause –	L3	CO3
3F-7	The variables in the triggers are declared using -----	L4	CO3
3F-8	A functional dependency is a relationship between _____	L2	CO4
3F-9	A _____ is normalized after it has been organized.	L1	CO4
3F-10	The database design prevents some data from being stored due to _____.	L3	CO4
3F-11	If a relation has a 4NF and no join dependency, and when it joins, it should be _____, it is considered 5NF.	L6	CO4
3F-12	When the _____ the backup site takes over processing and becomes the primary.	L3	CO4
3F-13	A relation is in 2NF if: _____	L2	CO4
3F-14	4 NF is designed to cope with _____	L4	CO4
3F-15	A BCNF is _____	L1	CO4
Match the following			
3M-1	1. WHERE (A) Specifies the conditions for grouping rows 2. GROUPBY (B) Specifies the conditions for joining tables 3. ORDERBY (C) Filters rows based on a specified condition 4. JOIN (D) Sorts the result set based on specified columns	L2	CO3
3M-2	1) COUNT() (A) Calculates the sum of selected numeric columns 2) MIN() (B) Calculates the average of selected numeric column 3) AVG() (C) Number of rows in a table 4) SUM() (D) Finds the minimum value from the selected column	L1	CO3

3M-3	(1) 1NF (2) 2NF (3) 3NF (4) 4NF	(A)No nontrivial multivalued dependencies (B)No transitive dependencies (C)No multiple values (D)No partial dependencies	L1	CO4
3M-5	1)Functional Dependency 2)Normalization 3)Decomposition 4)Loss less join decomposition	(A)Process of organizing data in database (B)Splitting of relation in to sub relations (C)Natural join of two relations it gives the original relation (D)Constraints on set of relations	L1	CO4
5-MARKS QUESTIONS				
3D-1.	Explain A bout Sub Queries with Examples.		L2	CO3
3D-2.	Explain the Following Operators in SQL with Examples SOME,IN,NOTIN,ANY		L2	CO3
3D-3.	Write Nested query or correlated nested queries for a) Find the names of sailors who have reserved both red and greenboat. b) Find the names of sailors who have reserved all boats. c) Find the names of sailors who have reserved red or green boat d) Find boats not reserved by the sailor with sid=100 e) Find Sailors with highest Rating		L1	CO3
3D-4.	a) Define trigger? With examples.(insert,update,delete) b) Differentiate row level and statement level Triggers?		L1,4	CO3
3D-5.	Explain about complex integrity constraints over SQL?		L2	CO3
3D-6.	a) Explain about aggregation operators? b) Explain UNION,INTERSECT,EXCEPT operations?		L2	CO3
3D-7.	a. Explain about a nested query and correlated nested queries? b. Write a nested query to find the names of sailors who have reserved both a red and greenboat? c. Write a nested query to find the names of sailors who have reserved all boats?		L2	CO3
3D-8	Define Redundancy? And how does It address redundancy ? Discuss the problems that may be caused by redundancy?		L1, L2	CO4
3D-9	Compute the closure of the following set of functional dependencies for a relation scheme. R(A,B,C,D) FD={A->B,B->C,C->D} List the candidate keys of R?		L5	CO4
3D-10	a) Explain About properties of decomposition? b) Suppose that we decompose the schema R=(A,B,C,D,E) into R1(A,B,C) and R2(A,D,E). Show that this decomposition is lossless-join decomposition if the following set F of functional dependencies holds: A→BC, CD→E, B→D, E→A.		L2, L5	CO4
3D-11	Define normalization and Explain 1NF,2NF,3NF,BCNF Normal forms with examples?		L1	CO4
3D-12	R(A,B,C,D) Is a Relation. Which of the following does not have a lossless join, dependency preserving BCNF decomposition? Explain in detail. a) A>B, B->CD b) A->B, B->C, C->D c) AB->C, C->AD d) A->BCD		L4	CO4
3D-13	a) Discuss scheme refinement in database design? b) What are the conditions required for 4NF and 5NF Normal forms? Explain with example		L2	CO4
3D-14	a) List and Explain the inference rules for Functional dependencies? b) What is the difference between 3NF and BCNF?		L4	CO4
3D-15	Illustrate Multi valued dependencies and Fourth normal form with example?		L3	CO4

[Type text]

3D-16	What are the Integrity constraints in SQL ? DEscribe	L2	CO4
-------	--	----	-----



SRIINDUCOLLEGE OF ENGINEERING & TECHNOLOGY QUESTION BANK
(Regulation: R22)
Department of CSE, IT, CSIT, AIML, CS, AIDS & DS

(Regulation: R22)

Sub.Code & Title (R22CSE2214) DATABASE MANAGEMENT SYSTEMS

Academic Year: 2025-26

Year/Sem.

II-II/AIML

Faculty Name & Designation

Mrs.M.MAYURI , Asst.Professor

UNIT-IV TRANSACTIONS

OBJECTIVE TYPE QUESTIONS

**BT
Level**

**Course
Outcome**

4C-1

Collections of operations that form a single logical unit of work are called _____
 a) Views b) Networks
 c) Units d) Transactions

L1

CO5

4C-2

Which of the following is a property of transactions?
 a) Atomicity b) Durability
 c) Isolation d) All of the mentioned

L2

CO5

4C-3

Execution of transaction in isolation preserves the _____ of a database
 a) Atomicity b) Consistency
 c) Durability d) All of the mentioned

L3

CO5

4C-4

The execution sequences in concurrency control are termed as _____
 a) Serials b) Schedules
 c) Organizations d) Timetables

L2

CO5

4C-5

The scheme that controls the interaction between executing transactions is called as
 a) Concurrency control scheme b) Multiprogramming scheme
 c) Serialization scheme d) Schedulescheme

L1

CO5

4C-6

Which of the following cannot be used to implement a timestamp
 a) System clock b) Logical counter
 c) External time counter d) None of the mentioned

L3

CO5

4C-7

W-timestamp(Q) denotes?
 a) The largest time stamp of any transaction that can execute write(Q) successfully
 b) The largest timestamp of any transaction that can execute read(Q) successfully
 c) The smallest timestamp of any transaction that can execute write(Q) successfully
 d) The smallest timestamp of any transaction that can execute read(Q) successfully

L3

CO5

4C-8

A schedule is _____ if it is conflict equivalent to a serial schedule.
 a) Conflict serializable b) Conflicting
 c) Non serializable d) None

L4

CO5

4C-9

The set of _____ in a precedence graph consists of all the transactions participating in the schedule
 a) Vertices b) Edges
 c) Directions d) None of the mentioned

L2

CO5

4C-10	I and J are _____ if they are operations by different transactions on the same data item and at least one of them is a write operation. a) Conflicting b) Overwriting c) Isolated d) Durable	L4	CO5
4C-11	_____ Rolls back all transactions that were incomplete at the time of crash. a) Analysis pass b) Redo pass c) Undo pass d) None of the mentioned	L5	CO5
4C-12	The backup is taken by a) Erasing all previous records b) Entering the new records c) Sending all log records from primary site to the remote backup site d) Sending selected records from primary site to the remote backup site	L2	CO5
4C-13	_____ Scheme that records only information about dirty pages and associated information and does not even require writing dirty pages to disk. a) Fuzzy logic b) Checkpoints c) Fuzzy-checkpoint d) Logical checkpoint	L2	CO5
4C-14	An operation is part of a transaction if it is _____ related. A. Logically B. Analytically C. Reasonably D. None	L2	CO5
4C-15	How many operations of transactions are there? A. 3 B. 4 C. 5 D. 6	L4	CO5
	FILL IN THE BLANKS ½ MARK QUESTIONS	BT Level	Course Outcome
4F-1	An operation is part of a transaction if it is _____ related.	L2	CO5

4F-2	To access the contents of the database, user performs transactions.	L3	CO5
4F-3	X is read from a database and stored in a buffer in main memory with the _____ operation.	L4	CO5
4F-4	Writing the data from the buffer back to the database is accomplished by using the _____ operation.	L4	CO5
4F-5	_____ Is used to permanently save the work.	L2	CO5
4F-6	An undo operation is called a _____.	L2	CO5

4F-7	In a database, prior to and after a transaction,properties are used to ensure_____.	L4	CO5
4F-8	_____A transaction completes its execution is said to be-----	L2	CO5
4F-9	Serializability of current transaction is ensured by_____	L2	CO5
4F-10	Rollback of a transaction is_____	L2	CO5
4F-11	_____ensure that system will never enter in deadlock	L4	CO5
4F-12	Transactions that are_____do not expose all changes.	L3	CO5
4F-13	All changes made in a transaction are_____once it commits.	L3	CO5
4F-14	Transactions allow the database to be transformed from_____.	L2	CO5
4F-15	A database's consistent state is measured by the_____property.	L3	CO5
	MATCHTHEFOLLOWING1MARKQUESTIONS	BT Level	Course Outcome
4M-1	(1) COMMITEDSTATE (A)When a transaction aborts (2) ACTIVESTATE (B)when a transaction begins (3) FAILEDSTATE (C)when a transaction cannot be started (4) TERMINATEDSTATE (D)When transaction is executed	L2	CO5
4M-2	(1) Atomicity (A)Data should be corrective after System failures (2) Integrity (B)Correctness of data (3) Consistency (C)Transaction should be either happen completely or not at all (4) Durability (D)Multiple transactions occur without any interference	L2	CO5
4M-3	(5) Growing Phase (A)initial state (6) Shrinking phase (B)All the locks are issued (7) Validation Phase (C)No locks are issued (8) Active Phase (D)Optimistic Concurrency Control Technique	L2	CO5
4M-4	(1) Serial Schedule (A)Read-Only access (2) Non-Serial Schedule (B)Transactions execute one after the other (3) Serializable Schedule (C)Transactions execute randomly (4) Shared Lock (D)Concurrent execution	L2	CO5
4M-5	1)Exclusive lock a)improve over all performance,resource management in dbms 2)Checkpoint b)Read-write lock 3)Multiple Granularity c)level of interaction between concurrent tran actions 4)Isolation d)dirty pages	L2	CO5

PART-B			
5MARKSQUESTIONS			
4D-1	Differentiate Concurrent execution of transaction with examples?	L4	CO5
4D-2	a) Explain about remote backup system. b) Compare and contrast Shared lock and Exclusive lock?	L2	CO5
4D-3	Explain about serializability? Discuss about conflict serializability?	L2	CO5
4D-4	Explain ACID properties and Illustrate them through examples?	L2	CO5
4D-5	Demonstrate the functionality of lock manager and transaction manager?	L3	CO5
4D-6	Define Deadlock and explain its prevention schemes?	L1	CO5
4D-7	What is transaction? Explain different states of transaction.	L2	CO5
4D-8	Examine how two-phase locking protocol ensures serializability?	L4	CO5
4D-9	Explain the TimeStamp-Based Concurrency Control protocol. How is it used to ensure serializability?	L2	CO5
4D-10	Explain the Checkpoint logbased recovery scheme for recovering the database.	L2	CO5
4D-11	Judge the failures that can occur with loss of Non-volatile storage and recoverable schedules and cascadeless schedules.	L5	CO5
4D-12	Examine the problems with lock-based concurrency control protocols.	L4	CO5
4D-13	Explain multiple granularity of locking protocol with example.	L2	CO5
4D-14	Explain different types of Advanced Recovery Techniques?	L2	CO5
4D-15	Justify validation based protocol, Log based recovery.	L5	CO5
4D-16	a) Explain the Properties of Transactions. b) What are the concurrent control mechanisms without locking.	L1	CO5

	SRIINDUCOLLEGE OF ENGINEERING & TECHNOLOGY (Regulation:R22) Department of CSE ,IT,CSIT,AI ML,CS,AIDS &DS			(Regulation:R22)
	Sub.Code&Title	(R22CSE2214)DATABASEMANAGEMENTSYSTEMS		
	AcademicYear:2025-26		Year/Sem.	II-II/AI ML
	FacultyName&Designation		Mrs.M.MAYURI , Asst.Professor	

UNIT-V					
OBJECTIVE TYPE QUESTIONS ½ MARK QUESTIONS				BT Level	Course Outcome
5C-1	The logical sequence of _____ recording all the update activities in the database. a) Log records b) Records c) Entries d) Redo			L2	CO6
5C-2	The _____ scheme uses a page table containing pointers to all pages; the page table itself and all updated pages are copied to an _____ location. a) Shadow copy b) Shadow Paging c) Update log records d) AI			L3	CO6
5C-3	The storage structure which do not survive system crashes are _____ a) Volatile storage b) Non-volatile storage c) Stable storage d) Dynamic storage			L1	CO6
5C-4	The unit of storage that can store one or more records in a hash file organization are a) Buckets b) Disk pages c) Blocks d) Nodes			L3	CO6
5C-5	Which of the following is the oldest database model? a) Relational b) Hierarchical c) Physical d) Network			L1	CO6
5C-6	A hash function must meet _____ criteria. a) Two b) Three c) Four d) None of the mentioned			L4	CO6
5C-7	The property (or set of properties) that uniquely define each row in a table is called the: a) Identifier b) Index c) Primary key d) Symmetric key			L1	CO6
5C-8	The database design that consists of multiple tables that are linked together through matching data stored in each table is called a) Hierarchical database b) Network database c) Object oriented database d) Relational database			L1	CO6
5C-9	The primary storage is also referred as- A. Volatile Storage B. Non-volatile Storage C. Seamless Storage D. None of the above			L1	CO6

5C-10	Memory types that use_____storage onto permanently store data. A.Primary B.Secondary C.Tertiary D.None	L3	CO6
5C-11	Which of the following is the type of data storage? A.Primary B.Secondary C.Tertiary D.All of the above	L2	CO6
5C-12	We can access records by using the_____key. A.Primary B.Foreign C.Alternate D.Composite	L2	CO6
5C-13	Based on the type of file organization for a given set of records, we can determine the _____ of access. A.Type B.Frequency C.Both A and B D.None of the above	L4	CO6
5C-14	How many types of file organizations are there? A.5 B.6 C.7 D.8	L1	CO6
5C-15	A hashing function is used to generate the_____of the data blocks in this technique. A.Data B.Addresses C.Numbers D.Records	L3	CO6

	FILL IN THE BLANKS ½ MARK QUESTIONS	BTLevel	CourseOutcome
5F-1	_____Are contained in the File.	L2	CO6
5F-2	The implementation of files of fixed length records is simpler than that of files of_____length records.	L1	CO6
5F-3	_____Cannot be created by inserting,updating,ordeleting records.	L1	CO6
5F-4	A_____is a memory location where the records are stored.	L2	CO6
5F-5	Any value in the column can be used by a_____function to generate the address.	L2	CO6
5F-6	To generate the address of a data block, the hash function most of ten uses the_____key.	L3	CO6

5F-7	When a database structure has a huge number of index values,it is very_____to search all of them for the desired information.	L6	CO6
5F-8	Various storage devices store_____in the form of data.	L2	CO6
5F-9	Data stored in the primary storage can be accessed_____.	L2	CO6
5F-10	A power_____of the systemal so results in the loss of data.	L1	CO6
5F-11	AB-tree is _____ tree data structure.	L1	CO6
5F-12	Efficiency of finding the next record in B+tree is_____.	L6	CO6
5F-13	There is/are_____levels of indexing in the B+ tree.	L4	CO6
5F-14	The leaf nodes of the B+ tree represent actual data_____.	L1	CO6
5F-15	A_____is used to link the leaf nodes in the B+ tree.	L1	CO6
	MATCHTHEFOLLOWING1 MARKQUESTIONS	BTLevel	CourseOutcome
5M-1	1.RAM (A)Static RandomAccessMemory 2.DRAM (B)Redundant Arrays of Independent Disks 3.SRAM (C)DynamicAccessMemory 4.RAID (D)RandomAccessMemory	1	CO6

5M-2	(1) Sequential File Organization (2) Heap File Organization (3) Hash File Organization (4) B+ File Organization	(A)Files are stored in tree like structure (B)Files are stored in a sequential order (C)Data in a file are stored in Blocks (D)Uses Hash functions in finding a file	2	CO6
5M-3	(1) Ordered Index (2) Primary Index (3) Clustered Index (4) Dense Index	(A)Index created Primary key (B)Contains Search key value in data files (C)Index on sorted columns (D)Index defined on ordered datafiles	1	CO6
5M-4	(1) RAID0 (2) RAID1 (3) RAID2 (4) RAID3	(A)Record error correction done (B)Strips data on to multiple disks (C)Uses mirroring techniques in sending data to RAID controller (D)Data is broken down in to blocks	1	CO6
5M-5	(1) Static Hashing (2) Dynamic Hashing (3) Close Hashing (4) B+ tree	(A)New data bucket allocated for same hash result (B)Result an data bucket address is always same (C) <i>a balanced binary search tree</i> (D)Data bucket grows or Shrinks	2	CO6

PARTB

5MARKSQUESTIONS

5D-1	Discuss the Index Datastructure?	L2	CO6
5D-2	Discuss the Intuitions for tree Indexes?	L2	CO6
5D-3	Suppose that we are using extendible hashing on a file containing records with the following search key values: 5,9,12,16,21,25,32,34,38,42,51,55,61,65 Show that the extendible hash structure for this file if the hashfunction is $h(x)=x \bmod 3$ and bucket can hold fiver ecords.	L6	CO6
5D-4	Compare the hash based Indexing and Treebase Indexing?	L4	CO6
5D-5	Demonstrate the problems with storage of data on external storage? Explain.	L3	CO6
5D-6	Describe a brief note on File organization and Indexing?	L2	CO6
5D-7	a) Distinguish about primary and secondary Indexes? b) What are the clustered indexes?	L4	CO6
5D-8	Demonstrate bulk loading of B+tree of order 3 with the following data(key*) 56,32,18,72,45,16,98,83,81,27,39,51,66,44,33,22.	L6	CO6
5D-9	a)Explain in detail about Linear Hashing. b)Discuss about static hashing and extendable hashing.	L4	CO6
5D-10	State and explain various file organization methods.Give suitable examples to each of them	L2	CO6
5D-11	Judge How does Extendable hashing use a directory of buckets? How does it handles the insert and delete operations?	L5	CO6
5D-12	Explain in detail about ISAM? With example?	L2	CO6
5D-13	Compare and Contrast Extendible Hashing with Linear Hashing?	L4	CO6
5D-14	Compare I/O costs for all File Organizations?	L4	CO6
5D-15	Explain B+ trees? Illustrate insertion and deletion of an element in B+ tree with example?	L2	CO6
5D-16	Explain Indexed Sequential Access Method	L3	CO6

MODEL PAPER **CodeNo: R22CSE2214**
SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY
 (An Autonomous Institution under UGC, New Delhi)

Recognized under 2(f) and 12(B) of UGC Act 1956

Subject Name: DATABASE MANAGEMENT SYSTEMS

Time: 3 Hours

Max Marks: 60

Part- A Answer all the questions

(10QX1M=10Marks)

		Marks	Course outcome.	BT Level
1.a)	Define the terms i) Entity ii) Entityset iii) weak entityset iv) strong entityset?	(1)	CO1	I
b)	Define levels of abstraction?	(1)	CO1	I
c)	Difference between super and candidate key?	(1)	CO2	IV
d)	Write about views and updates on views?	(1)	CO2	III
e)	Discuss about Join dependencies and Fifth normal form?	(1)	CO3	II
f)	Define Normalization?	(1)	CO3	I
g)	Define a Transaction ? List the properties of transaction	(1)	CO4	I
h)	Difference between shared lock and exclusive lock?	(1)	CO4	IV
i)	Explain in detail about Extendible Hashing?	(1)	CO5	II
j)	Explain clustered index?	(1)	CO5	II

Part-B

Answer five questions choosing atleast one from each unit

(5QX10M=50Marks)

UNIT-I				
2a)	(a) Compare and Contrast file Systems with database systems? (b)Write short notes on history of DBMS?	(10)	CO1	IV,III
OR				
2b)	Draw ERdiagram for the following: A teacher can teach many courses. A student can enroll in many courses. A course may be a part of one or many programmes. A teacher can be mentor for many students,however a student can have only one mentor		CO1	VI
UNIT-II				
3a)	(a)Discuss about the operators SELECT,PROJECT,UNION? (b)Discuss about integrity constraints over relations?	(10)	CO2	III
OR				
3b)	Discuss about integrity constraints over relations?		CO2	I
UNIT-III				
4a)	Define normalization ?Explain 1NF,2NF,3NFNormal forms?	(10)	CO2	III
OR				
4b)	a) Explain about a nested query and correlated nested queries? b) Write a nested query to find the names of sailors who have reserved both a red and green boat? c) Write a nested query to find the names of sailors who have reserved all boats?		CO2	

UNIT-IV 5a) Discuss two phase locking protocol and strict two phase Locking protocols OR 5b) Discuss Serializability in detail?		(10)	CO3 CO3	III I
UNIT-V 6a) Compare I/O costs for all File Organizations? OR 6b) Explain B+ trees? Discuss about this Dynamic Index Structure?		(10)	CO4 CO4	IV II
s.no	Bloom Taxonomy Level	No of Questions	%	Name and Signature of Paper setter
1	Fundamental Knowledge from Level I&II	10	60%	
2	Knowledge on application and analysis from Level III&IV	4	30%	
3	Critical thinking and ability to design from Level V&VI	1	10%	

BR-22

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

D4

II B.Tech - II Semester - I Mid Term Examination, April - 2024

(R22CSE2214) DATABASE MANAGEMENT SYSTEMS

(For CSE, IT, AIML, AIDS, DS and CSIT)

Duration: 2 Hrs

Dt: 15-04-2024, Day-2 (AN)

Max Marks: 30M

Part - A

Answer All multiple choice questions.

Marks: 10Qx1/2M = 5M

* (L1-Remembering, L2-Understanding, L3-Appling, L4-Analyzing, L5-Evaluating, and L6-Creating.)

- | | Blind
on
Table
and
Level | Course
Outcome |
|---|--------------------------------------|-------------------|
| 1. In the relational modes, cardinality is termed as:
A) Number of tuples B) Number of attributes.
C) Number of tables. D) Number of constraints | [] I | CO1 |
| 2. Architecture of the database can be viewed as
A) Two levels. B) Four levels. C) Three levels D) One level. | [] III | CO1 |
| 3. E-R model uses this symbol to represent weak entity set?
A) Dotted rectangle. B) Diamond
C) Doubly outline direct angle D) None of these | [] IV | CO1 |
| 4. What is a relationship called when It is maintained between two entities?
A) Unary B) Binary C) Ternary D) Quaternary | [] IV | CO1 |
| 5. Cartesian product in relational algebra is
A) Unary operator. B) Binary operator. C) Ternary operator D) Not defined | [] I | CO2 |
| 6. A view in a relational database:
A) Stores data physically
B) Is a virtual table derived from other tables
C) Is only accessible by the database administrator
D) Cannot perform operations like SELECT and JOIN | [] II | CO2 |
| 7. Which of the following is a foreign key constraint?
A) Referential integrity B) Domain integrity
C) Entity integrity D) All | [] IV | CO2 |
| 8. The database schema is written in
A) DQL B) DML C) DDL D) DCL | [] II | CO2 |
| 9. Which of the following constraint does not enforce uniqueness?
A) UNIQUE B) Primary key C) Foreign key D) None of the mentioned | [] IV | CO4 |
| 10. Which of the following SQL functions can be used to find the average value of a column?
A) COUNT B) MAX C) AVG D) SUM | [] II | CO3 |

Answer All fill in the blank questions.

Marks: 6Qx1/2M = 3M

- | | | |
|--|-----|-----|
| 11. The attribute is represented in the E-R diagram by _____ | I | CO1 |
| 12. Person, Parts, chair, table, teacher are example of _____ | IV | CO1 |
| 13. Row in a table also known as _____ | II | CO2 |
| 14. Select operation is denoted by _____ | II | CO2 |
| 15. Constraints can be applied on _____ | III | CO3 |
| 16. _____ and _____ constraints form the core of the PRIMARY KEY constraint. | II | CO3 |

P.T.O.

Marks: 2Qx1M = 2M

Answer All Match the following questions.

17.	1. Database	A)	Raw facts	I	CO1
	2. Data	B)	Creating and managing databases		
	3. Information	C)	Collection of interrelated data		
	4. DBMS	D)	Processed data		

18.	1. DROP	A)	To add new attribute to the existing table	I	CO2
	2. DELETE	B)	Deletes completed at a from the table		
	3. TRUNCATE	C)	Delete complete structure of the table		
	4. ADD	D)	Deletes rows of the table		

Part - B

Marks: 4Qx5M = 20M

Answer any **FOUR** questions.

19. Compare and Contrast file System with database systems? ✓
20. Sketch the Structure of DBMS? ✓
21. Explain different types of database users and write the functions of DBA? ✓
22. Illustrate different set operations in Relational algebra with an example? ✓
23. Explain various data manipulation and data definition statements in SQL with examples.
24. Discuss about the operators SELECT, PROJECT, UNION.
Discuss about the operators renaming, Joins, Division, Set difference.

IV CO1
III CO1
II CO1
III CO2
II CO2
II CO2

BR-22

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY
III B.Tech - I Semester - I Mid Term Examination, SEP/OCT - 2024
(R22CSE2214) DATABASE MANAGEMENT SYSTEM

D4

(For CS & IOT)

Dt: 30-09-2024, Day-1 (AN)

Max Marks: 30M

Duration: 2 Hrs

Part - A

Marks: 10Qx1/2M = 5M

Answer All multiple choice questions.

* (L1-Remembering, L2-Understanding, L3-Applying, L4-Analyzing, L5-Evaluating, and L6-Creating.)

- | | [] | I | CO1 | |
|--|-----|-----|-----|---|
| 1. The view of total database content is _____
A) Conceptual view. ✓ B) Internal view.
C) External view. D) Physical View. | [] | I | CO1 | 4 |
| 2. The relational model feature is that there _____
A) is no need for primary key data.
B) is much more data independence than some other database models. ✓
C) are explicit relationships among records.
D) are tables with many dimensions | [] | I | CO1 | 4 |
| 3. The DBMS language component which can be embedded in a program is classified as _____
A) The data definition language (DDL). ✓
B) The data manipulation language (DML).
C) The database administrator (DBA).
D) A query language | [] | I | CO1 | 4 |
| 4. Choose a symbol used to represent weak entity set in Er diagram ?
A) Dotted rectangle. ✓ B) Diamond
C) Doubly outlined rectangle D) None of these | [] | II | CO2 | 5 |
| 5. In which of the following is record based logical model?
A) Network Model ✓ B) Object oriented model
C) E-R Model D) None of these | [] | III | CO2 | |
| 6. Select a relationship which is called when it is maintained between two entities?
A) Unary B) Binary ✓ C) Ternary D) Quaternary | [] | II | CO2 | |
| 7. Represents the overall design of database. _____
A) Instance B) Schema ✓ C) Metadata D) Data dictionary | [] | II | CO2 | |
| 8. Which of the following is a foreign key constraint?
A) Referential integrity ✓ B) Domain integrity C) Entity integrity D) All | [] | I | CO3 | |
| 9. Which of the following normal form deals with the anomaly of multi value dependency?
A) 1NF B) 2NF ✓ C) 4NF D) 5NF | [] | VI | CO3 | |
| 10. Which of the following is not a class of constraint in SQL Server?
A) NOT NULL ✓ B) CHECK C) NULL D) UNIQUE | | | | |

Marks: 6Qx1/2M = 3M

Answer All fill in the blank questions.

- | | | |
|---|----|-----|
| 11. The entity is represented in the E-R diagram _____ | I | CO1 |
| 12. The example of a one-to-one relationship is _____ | II | CO1 |
| 13. The representation of an optional relationship is _____ | IV | CO1 |
| 14. Select operation is denoted by _____ | II | CO2 |
| 15. Union operation eliminates the _____ tuples. | I | CO2 |
| 16. A functional dependency is a relationship between _____ | IV | CO4 |

Answer All Match the following questions

Marks: 2Qx1M = 2M

17.

1.	Advantages of DBMS	A.	Authorized users
2.	Data integrity	B.	Data is accurate and consistent
3.	Data Security	C.	Reducing Data Redundancy
4.	Backup and Recovery	D.	Restores the database

18.

1.	Primary Key	A.	Two or more attribute as Key
2.	Foreign Key	B.	Uniquely identifies the record
3.	Composite Key	C.	Reference to Primary Key

Part – B

Marks: 4Qx5M = 20M

Answer any FOUR questions.

19. Explain briefly about Data Abstraction and discuss levels of Abstraction.

II CO1

20. Discuss about the Concept Design with the ER Model.

IV CO1

21. Classify and explain briefly about Data models.

II CO1

22. Discuss about the operators renaming, joins, division.

I CO2

23. Enlighten the process of Enforcing Integrity Constraints using an Update operation.

I CO2

24. Discuss scheme refinement in database design.

I CO3

BR-22

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY
III B.Tech - I Semester - II Mid Term Examination, December - 2024
(R22CSE2214) DATABASE MANAGEMENT SYSTEM
(For CS & IOT)

D4

Duration: 2 Hrs

Dt: 17-12-2024, Day-1 (AN)

Max Marks: 30M

Part - A**Answer All multiple choice questions.**

* (L1-Remembering, L2-Understanding, L3-Applying, L4-Analyzing, L5-Evaluating, and L6-Creating.)

Marks: 10Qx1/2M = 5M

Blended Taxonomy Level	Course Outcomes
III	CO4

- How can we get all records (redundant as well as non-redundant) from union operator? [] III CO4
 A) Using 'ALL' operator with UNION.
 B) Using 'Distinct' operator with UNION.
 C) We get all records (redundant as well as non-redundant) with UNION operator by default.
 D) None of the above
- Which of the following constraint does not enforce uniqueness? [] I CO4
 A) UNIQUE B) Primary key C) Foreign key D) None of the mentioned
- The scheme that controls the interaction between executing transactions is called as _____. [] I CO5
 A) Concurrency control scheme B) Multiprogramming scheme
 C) Serialization scheme D) Schedule scheme
- The set of _____ in a precedence graph consists of all the transactions participating in the schedule [] III CO5
 A) Vertices B) Edges C) Directions D) None of the mentioned
- _____ scheme that records only information about dirty pages and associated information and does not even require of writing dirty pages to disk. [] I CO5
 A) Fuzzy logic B) Checkpoints C) Fuzzy-checkpoint D) Logical checkpoint
- How many operations of transactions are there? [] I CO5
 A) 3 B) 4 C) 5 D) 6
- The _____ scheme uses a page table containing pointers to all pages; the page table itself and all updated pages are copied to a new location. [] I CO6
 A) Shadow copy B) Shadow Paging C) Update log records D) All
- The storage structure which do not survive system crashes are _____. [] I CO6
 A) Volatile storage B) Non-volatile storage
 C) Stable storage D) Dynamic storage
- Memory types that use _____ storage do not permanently store data. [] III CO6
 A) Primary B) Secondary C) Tertiary D) None
- Based on the type of file organization for a given set of records, we can determine the _____ of access. [] I CO6
 A) Type B) Frequency C) Both A and B D) None of the above

Answer All fill in the blank questions.

Marks: 6Qx1/2M = 3M

- A condition is referred to as _____. I CO4
- 4NF is designed to cope with _____. I CO4
- _____ states that all operations of a transaction must be performed on the same data. I CO4

BR-22

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY
III B.Tech - I Semester - II Mid Term Examination, December - 2024
(R22CSE2214) DATABASE MANAGEMENT SYSTEM
(For CS & IOT)

D4

Duration: 2 Hrs

Dt: 17-12-2024, Day-1 (AN)

Max Marks: 30M

Part - A**Answer All multiple choice questions.**

* (L1-Remembering, L2-Understanding, L3-Applying, L4-Analyzing, L5-Evaluating, and L6-Creating.)

Marks: 10Qx1/2M = 5M

Blended Learning Level	Course Outcomes
III	CO4

- How can we get all records (redundant as well as non-redundant) from union operator? [] III CO4
 A) Using 'ALL' operator with UNION.
 B) Using 'Distinct' operator with UNION.
 C) We get all records (redundant as well as non-redundant) with UNION operator by default.
 D) None of the above
- Which of the following constraint does not enforce uniqueness? [] I CO4
 A) UNIQUE B) Primary key C) Foreign key D) None of the mentioned
- The scheme that controls the interaction between executing transactions is called as _____. [] I CO5
 A) Concurrency control scheme B) Multiprogramming scheme
 C) Serialization scheme D) Schedule scheme
- The set of _____ in a precedence graph consists of all the transactions participating in the schedule [] III CO5
 A) Vertices B) Edges C) Directions D) None of the mentioned
- _____ scheme that records only information about dirty pages and associated information and does not even require of writing dirty pages to disk. [] I CO5
 A) Fuzzy logic B) Checkpoints C) Fuzzy-checkpoint D) Logical checkpoint
- How many operations of transactions are there? [] I CO5
 A) 3 B) 4 C) 5 D) 6
- The _____ scheme uses a page table containing pointers to all pages; the page table itself and all updated pages are copied to a new location. [] I CO6
 A) Shadow copy B) Shadow Paging C) Update log records D) All
- The storage structure which do not survive system crashes are _____. [] I CO6
 A) Volatile storage B) Non-volatile storage
 C) Stable storage D) Dynamic storage
- Memory types that use _____ storage do not permanently store data. [] III CO6
 A) Primary B) Secondary C) Tertiary D) None
- Based on the type of file organization for a given set of records, we can determine the _____ of access. [] I CO6
 A) Type B) Frequency C) Both A and B D) None of the above

Answer All fill in the blank questions.

Marks: 6Qx1/2M = 3M

- A condition is referred to as _____. I CO4
- 4NF is designed to cope with _____. I CO4
- _____ states that all operations of a transaction must be performed on the same data. I CO4

Answer All Match the following questions

Marks: 2Qx1M = 2M

17.

I CO3

1.	1NF	A.	No non trivial multi valued dependencies
2.	2NF	B.	No transitive dependencies
3.	3NF	C.	No multiple values
4.	4NF	D.	No partial dependencies

18.

I CO6

1.	Ordered Index	A.	Index created on a Primary key
2.	Primary Index	B.	Contains Search key value in data files
3.	Clustered Index	C.	Index on sorted columns
4.	Dense Index	D.	Index defined on ordered data files

Part - B

Answer any FOUR questions.

Marks: 4Qx5M = 20M

19. Define Redundancy? And how does it address redundancy? Discuss the problems that may be caused by redundancy? III CO4
20. What is the functionality of lock manager and transaction manager? III CO5
21. i) What is a log in the content of DBMS? II CO5
ii) How does check pointing eliminate some of the problems associated with log based recovery?
22. Discuss how do you recover from Concurrent transactions. IV CO5
23. Give a brief note on File organization and Indexing. VI CO6
24. Compare and Contrast Extendible Hashing with Linear Hashing. IV CO6

BR-22

HT.No.

22D41A6295

D4
QC2455

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, New Delhi) - Recognized under 2(f) and 12(B) of UGC Act 1956

III B.Tech. I Semester (REGULAR) End Examinations, JANUARY- 2025.

(R22CSE2214) DATABASE MANAGEMENT SYSTEM

02/01/2025

(For CS & IoT)

Day-2(FN)

Duration: 3 Hrs

Maximum Marks: 60M

Blooms Taxonomy : (I-Remembering, II-Understanding, III-Applying, IV-Analyzing, V-Evaluating and VI-Creating)

Course Outcomes : CO

PART – A

Answer ALL the following questions.

(10Qx1M=10M)

- | | | |
|--|-----|-----|
| 1. a) What is DBMS? | I | CO1 |
| b) Define data model. | I | CO1 |
| c) What is an Integrity constraint? | II | CO2 |
| d) Define Relational Algebra. | I | CO2 |
| e) Mention the use of UNION command? | I | CO3 |
| f) What is Primary key? | II | CO3 |
| g) Give the reason for allowing concurrency. | I | CO4 |
| h) Define Transaction state. | III | CO4 |
| i) What is ISAM? | II | CO5 |
| j) Write about indexing? | II | CO5 |

PART – B

Answer FIVE questions choosing at least one from each unit.

(5Qx10M=50M)

UNIT-I

- | | | |
|--|-----|-----|
| 2a. i) Explain the levels of abstraction in a DBMS. | III | CO1 |
| ii) Write the additional features of ER Model. | | |
| (OR) | | |
| 2b. i) Differentiate between File System versus DBMS. | V | CO1 |
| ii) Explain about Entity, Attributes and Entity Set with examples. | | |

UNIT-II

- | | | |
|--|-----|-----|
| 3a. i) Explain about Integrity Constraint over Relations. | II | CO2 |
| ii) Explain about Logical Database Design. | | |
| (OR) | | |
| 3b. What is Relational Algebra? Explain about Tuple Relational Calculus in detail. | III | CO2 |

UNIT-III

- | | | |
|---|----|-----|
| 4a. Explain all Integrity constraints in SQL with examples. | II | CO3 |
| (OR) | | |
| 4b. What is Normalization? Explain different normal forms neatly. | I | CO3 |

UNIT-IV

- | | | |
|--|-----|-----|
| 5a. i) Explain Two-phase locking with example. | III | CO4 |
| ii) Describe about Testing for Serialization. | | |
| (OR) | | |
| 5b. i) Explain Implementation of Atomicity and Durability. | II | CO4 |
| ii) Explain Log-Based Recovery neatly. | | |

UNIT-V

- | | | |
|---|-----|-----|
| 6a. i) Write about Hash Based Indexing and Tree based Indexing briefly. | III | CO5 |
| ii) Describe the different types of File organizations briefly. | | |
| (OR) | | |
| 6b. i) Explain B+ Trees. Discuss about this Dynamic Index Structure. | V | CO5 |
| ii) Illustrate insertion and deletion of an element in B+ Trees with example. | | |

BR-22

HT.No.

23D41A6247

D4

QC2626



SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, New Delhi) - Recognized under 2(f) and 12(B) of UGC Act 1956

III B.Tech. I Semester (REG & SUPPL) End Examinations, DEC2025-JAN2026.

(R22CSE2214) DATABASE MANAGEMENT SYSTEMS

31/12/2025

(For CS & IoT)

Day-2(FN)

Duration: 3 Hrs

Maximum Marks: 60M

Blooms Taxonomy : (I-Remembering, II-Understanding, III-Applying, IV-Analyzing, V-Evaluating and VI-Creating)

Course Outcomes : CO

PART - A

Answer ALL the following questions.

(10Qx1M=10M)

1. a) Define View.
- b) Mention the applications of DBMS.
- c) What is an Active database?
- d) What are the aggregate operators in SQL?
- e) Define Functional dependency.
- f) What are the properties of Decomposition?
- g) Define Transaction.
- h) What is Multiple Granularity Locking?
- i) What is Hashing?
- j) Give example of B+ trees.

- | | |
|-----|-----|
| I | CO1 |
| II | CO1 |
| I | CO2 |
| I | CO2 |
| I | CO3 |
| III | CO3 |
| I | CO4 |
| I | CO4 |
| II | CO5 |
| I | CO5 |

PART - B

Answer FIVE questions choosing at least one from each unit.

(5Qx10M=50M)

UNIT-I

- 2a. Explain the architecture of Database Management Systems with a neat diagram.

II CO1

(OR)

- 2b. a) What are the different levels of data abstraction?
b) Explain about the steps involved in design of a Database.

IV CO1

UNIT-II

- 3a. a) What are the statements in SQL for destroying and altering tables?
b) What is a Primary key and Foreign key? Explain in detail.

II CO2

(OR)

- 3b. I) What is join operation in relational algebra? What are the different types of join?
II) Write Relational Algebra Queries for the following (for Sailors Database)
Sailors(sid,sname,rating,age), Boats(bid,bname,color), Reserves(sid,bid,day)
(i) Find the Sailor id's with age over 20 and who have not reserved a red boat.
(ii) Find the names of Sailors who reserved boat 103.

III CO2

UNIT-III

- 4a. a) What are the complex integrity constraints in SQL? Describe.
b) What is a Trigger? Explain with an example.

II CO3

(OR)

- 4b. What is Normal form? Explain normalization (1NF, 2NF, 3NF) with examples.

IV CO3

UNIT-IV

- 5a. a) Explain the properties of Transactions.
b) What are the concurrent control mechanisms without locking?

I CO4

(OR)

- 5b. Explain in detail about the log based recovery.

II CO4

UNIT-V

- 6a. Explain Indexed Sequential Access Method.

III CO5

(OR)

- 6b. i) Describe about Static hashing.
ii) Explain about Extendible hashing in detail.

V CO5
