# 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

Estd.2001

NAAC
NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

# DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

## ACADEMIC YEAR 2025-2026

# SRI INDU COLLEGE 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. – 501 510**

## DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

# HANDOUT- INDEX

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## VISION OF THE INSTITUTE

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

## MISSION OF THE INSTITUTE

**$IM_1$:** Provide high quality academic programs, training activities and research facilities.

**$IM_2$:** Promote continuous industry-institute interaction aimed at promoting employability, entrepreneurship, leadership and research aptitude among stakeholders.

**$IM_3$:** Contribute to the economic and technological development of the region, state and nation.

## DEPARTMENT VISION

To become a prominent department empowering students to achieve their academic and professional career in the field of computer science & information technology.

## DEPARTMENT MISSION

The Department has following Missions:

**DM1:** To impart professional education improving intellectual ability creation.

**DM2:** To build engineers with the ability of teamwork, communication and interpersonal skill.

**DM3:** To uplift innovation and research to get acquainted with industrial and societal commitment.

## PROGRAM EDUCATIONAL OBJECTIVES(PEOs)

| | |
|---|---|
| **PEO1:** | Graduates will demonstrate technical competency and leadership to become professional engineers leading to a successful career. |

| | |
|---|---|
| **PEO2:** | Graduates will pursue lifelong learning in generating innovative engineering solutions using research and complex problem-solving skills. |
| **PEO3:** | Graduates will demonstrate commitment towards sustainable development for the betterment of society. |

## 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** | **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| **PO6** | **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| **PO7** | **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| **PO8** | **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| **PO9** | **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| **PO10** | **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. |
| **PO11** | **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. |

| | |
|---|---|
| **PO12** | **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** | **Software Development:** To apply the knowledge of Software Engineering, Data Communication, Web Technology and Operating Systems for building IOT and Cloud Computing applications. |
| **PSO2** | **Industrial Skills Ability:** Design, develop and test software systems for world-wide network of computers to provide solutions to real world Problems. |
| **PSO3** | **Project Implementation:** Analyze and recommend the appropriate IT Infrastructure required for the implementation of a project. |

## COURSE OUTCOMES (CO's)

**Academic Year**: 2021-22

**Class:** II YEAR-II SEM**.**

**Course Name:** DATA BASE MANAGEMENT SYSTEMS (R20CSE2214)

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

| **Course Outcomes (COs)** | |
|---|---|
| **C214.1** | Understand the basics of instructions sets and their impact on processor design |
| **C2142** | Demonstrate an understanding of the design of the functional units of a digital computer system |
| **C214.3** | Evaluate cost performance and design trade-offs in designing and constructing a computer processor Including memory |
| **C214.4** | Design a pipeline for consistent execution of instructions with minimum hazards |
| **C214.5** | Recognize and manipulate representations of numbers stored in digital computers. |
| **C214.6** | Demonstrate the Characteristics of Multiprocessors. |

# COURSE ARTICULATION MATRIX

| CO | PO | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO1 | PSO2 | PSO3 |
| C214.1 | 3 | 2 | - | - | 3 | - | 2 | - | - | - | - | 2 | 2 | 3 | 2 |
| C214.2 | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | | 3 | 3 | 2 |
| C214.3 | 3 | 3 | - | 2 | 2 | - | 2 | - | - | - | - | | 3 | 3 | 2 |
| C214.4 | 3 | 2 | 3 | 2 | - | - | 2 | - | - | - | - | | 3 | 2 | 1 |
| C214.5 | 3 | 3 | 3 | 3 | 2 | - | - | - | 3 | - | - | | 3 | 3 | 1 |
| C214.6 | 3 | 3 | 3 | 3 | - | - | 2 | - | 3 | - | - | | 3 | 3 | 1 |
| **C214** | **3** | **2.6** | **3** | **2.6** | **2.2** | **-** | **2** | **-** | **3** | **-** | **-** | **2** | **2.8** | **2.8** | **1.5** |

**3: High 2. Medium 1. Low**

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D4

BR-22

Lr.No.SICET/AUTO/DAE/II B.Tech (BR-22) Academic Calendar/182/2023 Dt: 01.09.2023

# B.TECH II-YEAR (I-SEM & II-SEM) ACADEMIC CALENDAR

## ACADEMIC YEAR : 2023-24

### Academic Calendar for B.Tech – II Year Students (2022 - 23 Batch), BR-22 Regulation.

### I – Semester

| S.No. | EVENT | PERIOD | DURATION |
|---|---|---|---|
| 1. | Commencement of class work | 13.09.2023 (Wednesday) | |
| 2. | 1st Spell of Instructions for covering First Two and a half Units. | 13.09.2023 – 21.10.2023 | 5 Weeks, 4 Days |
| 3. | Dasara Vacation. | 23.10.2023 – 28.10.2023 | 1 Week |
| 4. | Continuation of 1st Spell of Instructions. | 30.10.2023 – 14.11.2023 | 2 Weeks, 2 Days |
| 5. | I Mid Term Examinations. | 15.11.2023 – 18.11.2023 | 4 Days |
| 6. | Submission of I Mid Term Examination Marks. | 23.11.2023 | |
| 7. | 2nd Spell of Instructions for Remaining Two and a half Units. | 20.11.2023 – 12.01.2024 | 8 Weeks |
| 8. | Sankranthi Holidays. | 13.01.2024 – 16.01.2024 | 4 Days |
| 9. | II Mid Term Examinations. | 17.01.2024 – 19.01.2024 | 3 Days |
| 10. | Preparation Holidays & Practical Examination. | 20.01.2024 – 27.01.2024 | 1 Week |
| 11. | Submission of II Mid Term Examination Marks. | 25.01.2024 | |
| 12. | I Semester End Examinations | 29.01.2024 – 10.02.2024 | 2 Weeks |
| Commencement of Class-Work for II B.Tech - II Semester 12.02.2024 (Monday) | | | |

### II – Semester

| S.No. | EVENT | PERIOD | DURATION |
|---|---|---|---|
| 1. | Commencement of class work | 12.02.2024 (Monday) | |
| 2. | 1st Spell of Instructions for covering First Two and a half Units. | 12.02.2024 – 06.04.2024 | 8 Weeks |
| 3. | I Mid Term Examinations. | 08.04.2024 – 13.04.2024 | 1 Week |
| 4. | Submission of I Mid Term Examination Marks. | 18.04.2024 | |
| 5. | 2nd Spell of Instructions for Remaining Two and a half Units. | 15.04.2024 – 11.05.2024 | 4 Weeks |
| 6. | Summer Vacation. | 13.05.2024 – 25.05.2024 | 2 Weeks |
| 7. | Continuation of 2nd Spell of Instructions. | 27.05.2024 – 22.06.2024 | 4 Weeks |
| 8. | II Mid Term Examinations. | 24.06.2024 – 26.06.2024 | 3 Days |
| 9. | Preparation Holidays & Practical Examination. | 27.06.2024 – 06.07.2024 | 1 Week, 3 Days |
| 10. | Submission of II Mid Term Examination Marks. | 02.07.2024 | |
| 11. | II Semester End Examinations | 08.07.2024 – 20.07.2024 | 2 Weeks |
| Commencement of Class-Work for III B.Tech - I Semester 22.07.2024 (Monday) | | | |

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
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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.

# DATA BASE MANAGEMENT SYSTEMS

**REFERENCE BOOKS:**

1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7thEdition.
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.

| | | |
|---|---|---|
| | **SRIINDU COLLEGE OF ENGG&TECH**<br>**QUESTIONBANK**<br>**(Regulation :R22)**<br>**Department of Computer Science and Information Technology** | **(Regulation:R22)** |
| **Sub.Code&Title** | **(R22CSE2214)DATABASE MANAGEMENT SYSTEMS** | |
| **AcademicYear:2025-26** | **Year/Sem.** | **II-II/CSIT** |
| **FacultyName&Designation** | **Mrs T. GLORY, ASST.PROFESSOR** | |

| Unit/ Item No. | Topic(s) | Book Reference | Page(s) From | Page(s) To | Teaching Methodology | Proposed No. of Periods | Actual Date of Handled | CO/RBT |
|---|---|---|---|---|---|---|---|---|
| | | | UNIT-III | | | | | |
| **III** | **SQL: QUERIES, CONSTRAINTS, TRIGGERS** | | | | | **12** | | |
| 3.1 | Introduction | T1 | 131 | 132 | Black board | 1 | | CO2/L2 |
| 3.2 | Form of basic SQL query | T1 | 133 | 141 | Black board | 1 | | CO2/L2 |
| 3.3 | UNION, INTERSECT, and EXCEPT | T1 | 141 | 144 | Black board | 1 | | CO2/L2 |
| 3.4 | Nested Queries, Aggregation operators | T1 | 144 | 162 | Black board | 1 | | CO2/L2 |
| 3.5 | NULL values, complex integrity constraints in SQL | T1 | 162 | 168 | Black board | 1 | | CO2/L2 |
| 3.6 | Triggers and active data bases | T1 | 168 | 171 | Black board | 1 | | CO2/L2 |
| 3.7 | **Schema Refinement :** Problems caused by redundancy | T1 | 605 | 608 | Black board | 1 | | CO2/L2 |
| 3.8 | Decompositions, Problems related to decompositions | T1 | 608 | 610 | Black board | 1 | | CO2/L2 |
| 3.9 | Reasoning about functional dependencies | T1 | 611 | 612 | Black board | 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) From | Page(s) To | Teaching Methodology | Proposed No. of Periods | Actual Date of Handled | CO/RBT |
|---|---|---|---|---|---|---|---|---|
| | | | UNIT-IV | | | | | |
| **IV** | **TRANSACTION MANAGEMENT** | | | | | **12** | | |
| 4.1 | Introduction to Transaction Concept, Transaction State | T1 | 520 | 520 | Black board | 1 | | CO3/L3 |
| 4.2 | Implementation of Atomicity and Durability | T1 | 521 | 522 | Black board | 1 | | CO3/L3 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4.3 | Concurrent Executions, Serializability, Recoverability, Implementation of isolation | T1 | 524 | 530 | Black board | 1 | | CO3/L3 |
| 4.4 | Testing for serializability, Lock Based Protocols | T1 | 550 | 555 | Black board | 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 |
| 4.7 | Log–Based Recovery | T1 | 582 | 583 | Black board | 1 | | CO3/L3 |
| 4.8 | Recovery with Concurrent Transactions | T1 | 583 | 585 | Presentation | 1 | | CO3/L3 |
| | **Review** | **Signature of the HOD/Coordinator** | | | | | | |
| Unit/ | Topic(s) | Book | Page (s) | | Teaching | Proposed | Actual Date of | CO/RBT |
| Item No | | Reference | From | To | Methodology | No. of Periods | Handled | |
| | **UNIT-V** | | | | | | | |
| V | **OVERVIEW ON FILE ORGANIZATION AND INDEXING** | | | | | **11** | | |
| 5.1 | Data on External Storage | T1 | 274 | 275 | Black board | 1 | | CO4/L3 |
| 5.2 | File Organization and Indexing | T1 | 275 | 276 | Black board | 1 | | CO4/L4 |
| 5.3 | Cluster Indexes, Primary and Secondary Indexes | T1 | 277 | 278 | Black board | 1 | | CO4/L4 |
| 5.4 | Index data Structures, Hash Based Indexing | T1 | 278 | 279 | Black board | 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 | Black board | 2 | | CO4/L3 |
| 5.8 | B+ Trees: A Dynamic Index Structure | T1 | 344 | 346 | Black board | 2 | | CO4/L3 |
| | **Review** | **Signature of the HOD/Coordinator** | | | | | | |

***LIST OF TEXT BOOKS AND REFERENCES***

**TEXT BOOKS:**

Database Management Systems, Raghurama Krishnan, Johannes Gehrke, *Tata Mc Graw Hill* 3rd Edition

Database System Concepts, Silberschatz, Korth, *Mc Graw hill*, V edition.

**REFERENCES:**

Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.

Fundamentals of Database Systems, Elmasri Navrate, *Pearson Education*

Introduction to Database Systems, C. J. Date, *Pearson Education*

Oracle for Professionals, The X Team, S.Shah and V. Shah, *SPD*.

Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL,Shah, *PHI*.

Fundamentals of Database Management Systems, M. L. Gillenson, *Wiley Student*

| | | |
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# QUESTION BANK WITH BLOOMS TAXONOMY LEVEL (BTL)

(1. Remembering 2. Understanding 3. Applying 4. Analyzing 5. Evaluating 6. Creating)

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

| | | | |
|---|---|---|---|
| 1C-6 | (C) are explicit relationships among records.<br>(D) are tables with many dimensions | L1 | CO1 |
| 1C-7 | Conceptual design<br>is a documentation technique.<br>needs data volume and processing frequencies to determine the size of the database.<br>involves modelling independent of the DBMS.<br>is designing the relational model. | L1 | CO1 |
| 1C-8 | The DBMS language component which can be embedded in a program is<br>The data definition language (DDL).<br>The data manipulation language (DML).<br>The database administrator (DBA).<br>A query language. | L1 | CO1 |
| 1C-9 | A relational database developer refers to a record as<br>(A) a criteria. (B) a relation.<br>(C) a tuple. (D) an attribute | L1 | CO1 |
| 1C-10 | In a Hierarchical model records are organized as<br>(A) Graph. (B) List.<br>(C) Links. (D) Tree. | L1 | CO1 |
| 1C-11 | The way a particular application views the data from the database that the applicationuses is a<br>(A) module. (B) relational model.<br>(C) schema. (D) sub schema. | L1 | CO1 |

| | | | |
|---|---|---|---|
| 1C-12 | Data independence means<br>data is defined separately and not included in programs.<br>programs are not dependent on the physical attributes of data.<br>programs are not dependent on the logical attributes of data.<br>both (B) and (C). | L5 | CO1 |
| 1C-13 | E-R model uses this symbol to represent weak entity set ?<br>Dotted rectangle.<br>Diamond<br>Doubly outlined rectangle<br>None of these | L1 | CO1 |
| 1C-14 | The conceptual model is<br>dependent on hardware.<br>dependent on software.<br>dependent on both hardware and software .<br>(D)independent of both hardware and software | L1 | CO1 |
| 1C-15 | What is a relationship called when it is maintained between two entities?<br>(A) Unary (B) Binary<br>(C) Ternary (D) Quaternary | L1 | CO1 |
| IF- 1 | _____ can help us detect poor E-R design. | L1 | CO1 |
| 1F-2 | The possible inputs for the database are collected by_____ | L1 | 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 ERD model the entity related to itself is referring to_____ | L1 | 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_____ | L2 | 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 |
| | | | |
| 1M-1 | Column 'A Column 'B<br>(1) Database (A) Raw facts<br>(2) Data (B) Creating and managing databases<br>(3) Information (C) Collection of interrelated data<br>(4) DBMS (D) Processed data | L1 | CO1 |
| 1M -2 | (1) Advantages of DBMS (A) Authorised users<br>(2) Data integrity (B) Data is accurate and consistent<br>(3) Data Security (C) Reducing Data Redundancy<br>(4) Backup and Recovery (D) Restores the database | L1 | CO1 |
| 1M -3 | (1) CHAR (A) It is used for storing integer values<br>(2) VARCHAR (B) It can represent numbers<br>(3) DECIMAL (C) Holds a variable-length string<br>(4) INT (D)Holds a fixed-length string | L1 | CO1 |
| 1M -4 | (1) RDBMS (A) storage unit in a Relational database<br>(2) Table (B) Collection of interrelated data<br>(3) Database designer (C)Tuple<br>(4) Record (D) Decides the name of the t able titles of Columns | L1 | CO1 |
| 1M -5 | (1) Data Model (A) Represents data in Table format<br>(2) Relational Data Model (B) Logical structure of database<br>(3) Hierarchical Data Model (C) Represents data in Graph format<br>(4) Relational data model (D) Represents data in Tree format | L1 | CO1 |
| | | | |
| 1D-1. | Compare and Contrast file Systems with database systems? | L2 | CO1 |
| 1D-2. | Write short notes on history of DBMS? | L6 | CO1 |
| 1D-3. | Explain briefly about Data Abstraction and discuss levels of Abstraction? | L2 | CO1 |
| 1D-4. | Describe the Structure of DBMS? | L1 | CO 1 |
| 1D-5. | Discuss additional features of the ER-Models. | L1 | CO 1 |
| 1D-6. | Explain briefly about database design steps? | L1 | CO |

| | | | |
|---|---|---|---|
| | | | 1 |
| 1D-7. | Distinguish strong entity set with weak entity set? Draw an ER diagram to illustrate weak entity set? | L1 | CO 1 |
| 1D-8 | **Explain** different types of database users and write the functions of DBA? | L2 | CO 1 |
| 1D-9 | Discuss about the Concept Design with the ER Model? | L4 | CO 1 |
| 1D-10 | Explain briefly about Data models? | L2 | CO 1 |
| 1D-11 | Discuss the various DDL, DML commands with illustrations in SQL. Why are null values not preferred in a relation?Write the advantages of linked lists.Write an algorithm to insert and delete a node in single linked list. | L1 | CO1 |
| 1D-12 | Write about the conceptual design of University with an ER Diagram? | L2 | CO 1 |
| 1D-13 | Give details about different Object based Data Models AND Record bases Logical Models? | L4 | CO 1 |
| 1D-14 | Give details about the levels of View of Data? | L1 | CO 1 |
| 1D-15 | Compare Entity Vs Relationships? | L1 | CO 1 |

**UNIT-II: INTROUCTION TO THE RELATION MODEL**

| | **Multiple choice Questions** | **BTLevel** | **Course Outcome** |
|---|---|---|---|
| 2C-1 | Relational calculus is a<br>(A) Procedural language. (B) Non- Procedural language.<br>(C) Data definition language. (D) High level language. | L1 | CO2 |
| 2C-2 | Cartesian product in relational algebra is<br>(A) a Unary operator. (B) a Binary operator.<br>(C) a Ternary operator. (D) not defined. | L1 | CO2 |
| 2C-3 | In case of entity integrity, the primary key may be<br>(A) not Null (B) Null<br>(C) both Null & not Null. (D) any value. | L1 | CO2 |
| 2C-4 | In tuple relational calculus P1 ®P2 is equivalent to<br>(A) ¬P1 Ú P2 (B) P1 Ú P2<br>(C) P1 Ù P2 (D) P1 Ù¬P2 | L1 | CO2 |

| | | | |
|---|---|---|---|
| | | | |
| 2C-5 | Relational Algebra is<br>Data Definition Language .<br>Meta Language<br>Procedural query Language | L1 | CO2 |
| | None of the above | | |
| 2C-6 | Key to represent relationship between tables is called<br>(A) Primary key (B) Secondary Key<br>(C) Foreign Key (D) None of these | L1 | CO2 |
| 2C-7 | --------produces the relation that has attributes of R1 and R2<br>(A) Cartesian product (B) Difference<br>(C) Intersection D) Product | L1 | CO2 |
| 2C-8 | In a relation<br>(A)Ordering of rows is immaterial<br>(B)No two rows are identical<br>(C)(A) and (B) both are true<br>(D)None of these | L1 | CO2 |
| 2C-9 | What is a relationship called when it is maintained between two entities?<br>(A) Unary (B) Binary<br>(C) Ternary (D) Quaternary | L1 | CO2 |
| 2C-10 | Which of the following is another name for weak entity?<br>(A) Child (B) Owner<br>(C) Dominant (D) All of the above | L1 | CO2 |
| 2C-11 | Which of the following is record based logical model?<br>(A) Network Model (B) Object oriented model<br>(C) E-R Model (D) None of these | L2 | CO2 |

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| 2C-12 | A primary key if combined with a foreign key creates<br>Parent-Child relationship between the tables that connect them.<br>Many to many relationship between the tables that connect them.<br>Network model between the tables that connect them.<br>None of the above | L2 | CO2 |
| 2C-13 | The database schema is written in<br>A) HLL (B) DML (C) DDL (D) DCL | L2 | CO2 |
| 2C-14 | represents the overall design of database.<br>(A) Instance (B) Schema (C) Metadata (D) Data dictionary | L2 | CO2 |
| 2C-15 | Which of the following is a foreing key constraint?<br>a)Referential integrity b) Domain integrity d) Entity 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 | In ___, there are a set of possible atomic values that apply to an attribute. | L1 | CO2 |
| 2F-5 | In ___, columns in a particular table are listed by their names. | L3 | CO2 |
| 2F-6 | The relational algebra query language is ___ | L2 | CO2 |
| 2F-7 | In Relational Algebra, queries are performed using ___. | L2 | CO2 |
| 2F-8 | Using the select operation, you can select ___ that satisfy certain criteria | L1 | CO2 |
| 2F-9 | Select operation is denoted by_____ | L2 | CO2 |
| 2F-10 | Propositional logic is conducted using p as a formula, using connectors like _____ | L1 | CO2 |
| 2F-11 | A list of the attributes we wish to appear in the result is displayed in ___ operation. | L2 | CO2 |
| 2F-12 | What is Project Operation denoted by _____ | L3 | CO2 |
| 2F-13 | If there are 2 types of tuples, A & B, the _____operation contains all the tuples that are either in A or B or both in A & B. | L2 | CO2 |

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| 2F-14 | Union operation eliminates the _____ tuples. | L1 | CO2 |
| 2F-15 | Union operation is denoted by _____ | L1 | CO2 |
| | **Match the following** | | |
| 2M-1 | 1) Primary Key (A) Two or more a<br>(2) Foreign Key (B) Uniquely identifies the record<br>(3) Composite Key (C)Reference tc Primary Key | L1 | CO2 |
| 2M-2 | (1) DDL (A) Insert, Delete, Update<br>(2) DCL (B) Create, Drop Alter<br>(3) DML (C) Grant, Revoke | L1 | CO2 |
| 2M-3 | (1) DROP (A) Deletes rows of the table<br>(2) DELETE (B) Deletes complete data from the table<br>(3) TRUNCATE (C) Deletes complete structure of the table | L1 | CO2 |
| 2M-4 | (1) Selection (A) Selects Column data from the relation<br>(2) Projection (B) Duplicate names to attributes<br>(3) Rename (C) Selects the required tuples from the relation | L1 | CO2 |
| 2M-5 | (1) INNER JOIN (A) Retrieves a left table and matching in right table<br>(2) RIGHT JOIN (B) Retrieves all the records matching in left or right tables<br>(3) LEFT JOIN (C) Retrieves records matching in both tables<br>(4) OUTER JOIN (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? | L2 | CO2 |
| 2D-2. | Discuss the reasons for converting SQL queries into relational algebra queries before optimization is done. | L1 | CO2 |
| 2D-3. | Write about views and updates on views? | L1 | CO2 |
| 2D-4. | Discuss about integrity constraints over relations? | L 3 | CO2 |

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| 2D-5. | List the table modification commands in SQL? | L 2 | CO2 |
| 2D-6. | Discuss about the operators SELECT, PROJECT, UNION? | L 2 | CO2 |
| 2D-7. | Discuss about the operators renaming, joins, division? | L 1 | CO2 |
| 2D-8 | Demonstrate how to add a NOT NULL column to a table with example? | L 1 | CO2 |
| 2D-9 | Write briefly about logical database design? | L 2 | CO2 |
| 2D-10 | a. Explain relational calculus?<br>b. Write a TRC query to find the names of sailors who have reserved boat 103?<br>c. Write a DRC query to find the names of sailors who have reserved boat 103? | L 2 | CO2 |
| 2D-11 | What are the different Aggregate Operations in SQL and What are the Complex Integrity Constraints in SQL? | L 2 | CO2 |
| 2D-12 | 14)Consider the relation scheme Emp Dept( Ename, SSN, Bdate, Address, Dnumber, Dname, DMGRSSN) and the following set of FD's<br>F={ SSN− > Ename,Bdate, Address, Dnumber Dnumber− > Dname, DMGRSSN}<br>Calculate the closer {SSN}+ and {Dnumber}+ with respect to F. | L 4 | CO2 |
| 2D-13 | Enlighten the process of Enforcing Integrity Constraints using an Update operation? | L1 | CO2 |
| 2D-14 | Illuminate the types of Joins with an example ? | L 4 | CO2 |
| 2D-15 | Give details about the roles of Triggers and Active Databases? | L 2 | CO2 |

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| | **SRIINDU COLLEGE OF ENGG&TECH**<br>**QUESTIONBANK**<br>**(Regulation :R22)**<br>**Department of Computer Science and Information Technology** | **(Regulation:R22)** |
| **Sub.Code&Title** | **(R22CSE2214)DATABASE MANAGEMENT SYSTEMS** | |
| **AcademicYear:2025-26** | **Year/Sem.** | **II-II/CSIT** |
| **FacultyName&Designation** | **Mrs T. GLORY, ASST.PROFESSOR** | |

| **UNIT-III SQL** | | | |
|---|---|---|---|
| | **Multiple choice Questions** | **BT Level** | **Course Outcome** |
| 3C-1 | Which of the following normal form deals with the anomaly of multivalue dependency?<br>a) 1NF b) 2NF c) 4NF d) 5NF | L1 | 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.<br>a) Procedures b) Triggers c) Functions d) one of the mentioned | L1 | CO3 |
| 3C-3 | The default extension for an Oracle SQL*Plus file is:<br>a) .txt b) .pls c) .ora d) .sql | L1 | CO3 |
| 3C-4 | Which of the following is not a class of constraint in SQL Server?<br>a) NOT NULL b) CHECK c) NULL d) UNIQUE | L6 | CO3 |
| 3C-5 | Which of the following is a foreing key constraint?<br>a)Referential integrity b) Domain integrity d) Entity integrity d) All | L3 | CO3 |

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| 3C-6 | Which of the following are the types of integrity constraints enforced by RDBMS?<br>a) Entity integrity b) Domain integrity c) Referential integrity d) All | L1 | CO3 |
| 3C-7 | Point out the correct statement.<br>a) CHECK constraints enforce domain integrity<br>b) UNIQUE constraints enforce the uniqueness of the values in a set of columns<br>c) In a UNIQUE constraint, no two rows in the table can have the same value for the columns<br>d) All of the mentioned | L1 | CO4 |
| 3C-8 | Which of the following constraint does not enforce uniqueness?<br>a) UNIQUE b) Primary key c) Foreign key d) None of the mentioned | L1 | CO4 |
| 3C-9 | Observe the following query and choose the correct option<br>SELECTDISTINCT name<br>FROM student<br>WHERE ID ISNOTNULL;<br>a)The query is syntactically wrong<br>b) The query gives all the possible student names where a finite value exists for ID<br>c) The query gives the names of the students that have a null ID and it also excludes identical names<br>d) The query gives the student names where a finite value exists for ID and it excludes<br><br>identical names | L2 | CO4 |
| 3C-10 | Purpose of foreign key constraint in SQL Server is _____<br><br>a) FOREIGN KEY constraints identify and enforce the relationships between tables<br><br>b) A foreign key in one table points to a candidate key in another table<br><br>c) You cannot insert a row with a foreign key value, except NULL, if there is no candidate<br><br>key with that value<br><br>d) None of the mentioned | L1 | CO3 |
| 3C-11 | Which of the following is not a foreign key constraint?<br><br>a) NO ACTION b) CASCADE c) SET NULL d) All of the mentioned | L1 | CO4 |
| 3C-12 | What does UNION operator do in a SQL Server statement?<br>a) Bring common data from the listed tables.<br>b) Bring data which is not common from the listed tables.<br>c) Bring all data from the listed tables.<br>d) Bring all distinct from the listed tables | L4 | CO4 |
| 3C-13 | Which one is correct syntax for applying UNION operator?<br>a) SELECT column_name(s) FROM table_name1 UNION table_name2<br>b) SELECT column_name(s) FROM table_name1<br>UNION<br>SELECT column_name(s) FROM table_name2<br>c) UNION SELECT column_name(s) FROM table_name1<br>SELECT column_name(s) FROM table_name2<br>d) SELECT FROM table_name1 AND table_name2 | L1 | CO4 |

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| 3C-14 | How can we get all records (redundant as well as non-redundant) from union operator?<br>a) Using 'ALL' operator with UNION.<br>b) Using 'Distinct' operator with UNION.<br>c) We get all records (redundant as well as non-redundant) with UNION operator by default.<br>d) None of the above | L3 | CO4 |
| 3C-15 | What is the function of the intersect operation?<br>a) It returns the intersection of the results of the results of any two different queries<br>b) It returns the intersection of the results of two different queries which have the same set of attributes in the select clause<br>c) It returns the intersection of the results of two different queries which have the same condition in the where clause<br>d) None of the mentioned | L6 | CO3 |
| 3C-16 | What is the function of the except operation?<br>a) It excludes all the results present in both the queries<br>b) It includes the results of the second query but excludes the results of the first query<br>c) It includes the results of the first query but excludes the results of the second query<br>d) It includes all the results of both queries but removes duplicates | L1 | CO3 |
| | **Fill in the blanks** | | |
| 3F-1 | Constraints can be applied on _____ | L4 | CO3 |
| 3F-2 | A condition is referred to as _____ | L1 | CO4 |
| 3F-3 | A functional dependency is a relationship between_____ | L4 | CO4 |
| 3F-4 | A ___ is normalized after it has been organized. | L1 | CO3 |
| 3F-5 | The database design prevents some data from being stored due to _____. | L3 | CO3 |
| 3F-6 | By normalizing relations or sets of relations, one minimizes ___. | L6 | CO4 |
| 3F-7 | When the _____ the backup site takes over processing and becomes the primary. | L3 | CO4 |
| 3F-8 | A relation is in 2NF if:_____ | L2 | CO4 |
| 3F-9 | 4NF is designed to cope with _____ | L1 | CO4 |
| 3F-10 | A BCNF is _____ | L4 | CO3 |
| 3F-11 | Redundancy is reduced in a database table by using the ___ form. | L1 | CO4 |
| 3F-12 | When a relation contains an atomic value, it is a ___ relation. | L1 | CO3 |
| 3F-13 | 2NF relations are those that are in 1NF with all the attribute types dependent on the ___ key. | L3 | CO3 |
| 3F-14 | A relation is in ___ if it is in Boyce Codd normal form and does not have any multivalued dependencies. | L4 | CO4 |
| 3F-15 | If a relation has a 4NF and no join dependency, and when it joins, it should be___, it is considered 5NF. | L4 | CO4 |
| | **Match the following** | | |
| 3M-1 | (1) Functional Dependency (A) Process of organising data in database<br>(2) Normalisation (B) Splitting of relation into sub relations<br>(3) Decomposition (C) Constraints on set of relations | L1 | CO3 |

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| 3M -2 | (1) 1NF (A) No non trivial multi valued dependencies<br>(2) 2NF (B) No transitive dependencies<br>(3) 3NF (C) No multiple values<br>(4) 4NF (D) No partial dependencies | L1 | CO3 |
| 3M -3 | (1) COUNT () (A) Calculates the sum of selected numeric columns<br>(2) MIN () (B) Calculates the average of selected numeric column<br>(3) AVG () (C) Number of rows in a table<br>(4) SUM () (D) Finds the minimum value from the selected column | L1 | CO3 |
| 3M -4 | (1) EXISTS (A) Distinctly identifies the row in a relation<br>(2) SOME (B) Checks the value with in the give range of values<br>(3) UNIQUE (C) Checks for existence of the result of a sub query<br>(4) BETWEEN (D) Checks for the value with in given set of values | L1 | CO4 |
| 3M -5 | (1) NOT NULL (A) Specified column must have the value falling in specified range<br>(2) DEFAULT (B) Ensures column values to be unique<br>(3) CHECK (C) Default values are set for a specified column<br>(4) UNIQUE (D) Column values should not be NULL | L1 | CO4 |

**5 - MARKS QUESTIONS**

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| 3D-1. | Explain About Functional Dependencies? | L1 | CO3 |
| 3D-2. | What are the problems caused by redundancy? | L2 | CO3 |
| 3D-3. | What are the problems caused by redundancy? | L1 | CO3 |
| 3D-4. | Discuss scheme refinement in database design? | L1 | CO3 |
| 3D-5. | Write about lossless join decomposition? | L2 | CO4 |
| 3D-6. | Compare the BCNF and IV Normal form? | L1 | CO4 |
| 3D-7. | List and Explain the inference rules for Functional dependencies? | L2 | CO4 |
| 3D-8 | Define Redundancy? And how does it address redundancy? Discuss the problems that may be caused by redundancy? | L3 | CO4 |
| 3D-9 | What is normalization? Explain the process of normalization with suitable examples. | L1 | CO3 |
| 3D-10 | Explain About properties of decomposition ? | L2 | CO3 |
| 3D-11 | Explain about aggregation operators? | L1 | CO3 |
| 3D-12 | Explain about complex integrity constraints over SQL? | L1 | CO4 |
| 3D-13 | EXPLAIN TRIGGER? With example. | L1 | CO4 |
| 3D-14 | a. Explain about a nested query and correlated nested queries?<br>b. Write a nested query to find the names of sailors who have reserved both a red and green boat?<br>c. Write a nested query to find the names of sailors who have reserved all boats? | L4 | CO4 |

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| 3D-15 | Illustrate Multivalued dependencies and Fourth normal form with example? | | |

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| | **Sub.Code&Title** | **(R22CSE2214)DATABASE MANAGEMENT SYSTEMS** | |
| | **AcademicYear:2025-26** | **Year/Sem.** | **II-II/CSIT** |
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| **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 _____<br>a) Views b) Networks c) Units d) Transactions | L1 | CO5 |
| 4C-2 | Which of the following is a property of transactions?<br>a) Atomicity b) Durability c) Isolation d) All of the mentioned | L3 | CO5 |
| 4C-3 | Execution of translation in isolation preserves the _____ of a database<br>a) Atomicity b) Consistency c) Durability d) All of the mentioned | L3 | CO5 |
| 4C-4 | The execution sequences in concurrency control are termed as _____<br>a) Serials b) Schedules<br>c) Organizations d) Time tables | L2 | CO5 |
| 4C-5 | The scheme that controls the interaction between executing transactions is called as _____<br>a) Concurrency control scheme b) Multiprogramming scheme<br>c) Serialization scheme d) Schedule scheme | L1 | CO5 |
| 4C-6 | Which of the following cannot be used to implement a timestamp<br>a) System clock b) Logical counter<br>c) External time counter d) None of the mentioned | L3 | CO5 |

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| 4C-7 | W-timestamp(Q) denotes?<br>a) The largest timestamp of any transaction that can execute write(Q) successfully<br>b) The largest timestamp of any transaction that can execute read(Q) successfully<br>c) The smallest timestamp of any transaction that can execute write(Q) successfully<br>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.<br>a) Conflict serializable b) Conflicting c) Non serializable d) None | L1 | CO5 |
| 4C-9 | The set of _____ in a precedence graph consists of all the transactions participating in the schedule<br>a) Vertices b) Edges c) Directions d) None of the mentioned | L3 | 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.<br>a) Conflicting b) Overwriting c) Isolated d) Durable | L1 | CO5 |
| 4C-11 | _____ rolls back all transactions that were incomplete at the time of crash.<br>a) Analysis pass b) Redo pass c) Undo pass d) None of the mentioned | L5 | CO5 |
| 4C-12 | The backup is taken by<br>a) Erasing all previous records b) Entering the new records<br>c) Sending all log records from primary site to the remote backup site<br>d) Sending selected records from primary site to the remote backup site | L4 | CO5 |
| 4C-13 | _____ scheme that records only information about dirty pages and associated information and does not even require of writing dirty pages to disk.<br>a) Fuzzy logic b) Checkpoints c) Fuzzy-checkpoint d) Logical checkpoint | L1 | CO5 |
| 4C-14 | f it is ___ related.<br>Logically<br>None | L1 | CO5 |
| 4C-15 | How many operations of transactions are there?<br>5 | L1 | CO5 |

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| | **FILL IN THE BLANKS<br>½ MARK QUESTIONS** | **BT Level** | **Course Outcome** |
| 4F-1 | An operation is part of a transaction if it is ___ related. | L3 | 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. | L2 | CO5 |
| 4F-4 | Writing the data from the buffer back to the database is accomplished by using the _____ operation. | L6 | CO5 |
| 4F-5 | ___ is used to permanently save the work. | L3 | CO5 |
| 4F-6 | An undo operation is called a ___. | L3 | CO5 |
| 4F-7 | In a database, prior to and after a transaction, properties are used to ensure ___. | L3 | CO5 |
| 4F-8 | ___ states that all operations of a transaction must occur simultaneously; otherwise, the transaction will be aborted. | L2 | CO5 |
| 4F-9 | Serializability of current transaction is ensured by_____ | L3 | CO5 |
| 4F-10 | Rollback of a transaction is_____ | L3 | CO5 |
| 4F-11 | ._____ ensure that system will never entered 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 |

| | MATCHTHEFOLLOWING 1MARK QUESTIONS | BT Level | Course Outcome |
|---|---|---|---|
| 4M-1 | (1) COMMITED STATE (A) When a transaction aborts<br>(2) ACTIVE STATE (B) when a transaction begins<br>(3) FAILED STATE (C) when a transaction cannot be started<br>(4) TERMINATED STATE (D) When transaction is executed | L1 | CO5 |
| 4M-2 | (1) Atomicity (A) Data should be correct even after System failures<br>(2) Integrity (B) Correctness of data<br>(3) Consistency (C) Transaction should be either happen completely or not at all<br>(4) Durability (D) Multiple transactions occur without any interference | L1 | CO5 |
| 4M-3 | (1) Growing Phrase (A) Transaction obtains lock but cannot release lock<br>(2) Shrinking Phrase (B) Ensures no violation of serializability<br>(3) Validation Phrase (C) Transaction releases locks but no new locks | L1 | CO5 |
| 4M-4 | (1) Serial Schedule (A) Concurrent execution<br>(2) Non-Serial Schedule (B) Transactions execute one after the other<br>(3) Serializable Schedule (C) Transactions execute randomly | L1 | C05 |

| PART B<br>5 MARKSQUESTIONS | | | |
|---|---|---|---|
| 4D-1 | Illustrate Concurrent execution of transaction with examples? | L1 | CO5 |
| 4D-2 | Describe the shadow paging recovery technique. Under what circumstances does it not require a log ? | L2 | CO5 |
| 4D-3 | Make clear about serializability? Discuss about conflict serializability? | L2 | CO5 |
| 4D-4 | Explain ACID properties and Illustrate them through examples? | L2 | CO5 |
| 4D-5 | What is the functionality of lock manager and transaction manager? | L3 | CO5 |
| 4D-6 | What information does the dirty page table and transaction table contain? Give a short notes on recovery from deadlock. | L3 | CO5 |
| 4D-7 | Write about 2-phase locking and lock granularity? | L2 | CO5 |
| 4D-8 | Discuss about time stamp method protocol? | L2 | CO5 |
| 4D-9 | What is a log in the content of DBMS? How does check pointing eliminate some of the problems associated with log based recovery? | L2 | CO5 |
| 4D-10 | How the terms fuzzy check pointing and recovery algorithm are used in advanced recovery techniques? | L2 | CO5 |
| 4D-11 | Discuss the failures that can occur with loss of Non-volatile storage? | L2 | CO5 |
| 4D-12 | Discuss how do you recover from Concurrent transactions? | L4<br>L1 | CO5 |
| 4D-13 | Discuss in detail Multiple Granularity? Explain Buffer Management? | L4 | CO5 |
| 4D-14 | Explain different types of Advanced Recovery Techniques? | L1 | CO5 |

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| 4D-15 | Write in detail about Remote Backup systems? | L4, L1 | CO5 |

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| | **SRIINDU COLLEGE OF ENGG&TECH QUESTIONBANK (Regulation :R22) Department of Computer Science and Information Technology** | | **(Regulation:R22)** |
| | **Sub.Code&Title** | **(R22CSE2214)DATABASE MANAGEMENT SYSTEMS** | |
| | **AcademicYear:2025-26** | **Year/Sem.** | **II-II/CSIT** |
| | **FacultyName&Designation** | **Mrs T. GLORY, ASST.PROFESSOR** | |

| **UNIT – V** | | | |
|---|---|---|---|
| | **OBJECTIVE TYPE QUESTIONS ½ MARK QUESTIONS** | **BT Level** | **Course Outcome** |
| 5C-1 | The log is a sequence of _____ recording all the update activities in the database. a) Log records b) Records c) Entries d) Redo | L1 | 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 a new location. a) Shadow copy b) Shadow Paging c) Update log records d) Al | L1 | CO6 |
| 5C-3 | The storage structure which do not survive system crashes are _____ ) V…orage b) Non-volatile storage …le storage d) Dynamic storage | L1 | CO6 |
| 5C-4 | …rage that can store one are more records in a hash file organization are … pages c) Blocks d) Nodes | L3 | CO6 |
| 5C-5 | …h of the following is the oldest database model? a) Relational b) Hierarchical c) Physical d) Network | L1 | CO6 |

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| 5C-6 | A hash function must meet _____ criteria.<br>a) Two b) Three c) Four d) None of the mentioned | L1 | CO6 |
| 5C-7 | The property (or set of properties) that uniquely defines each row in a table is called the:<br>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<br>a) Hierarchical database b) Network database<br>c) Object oriented database d) Relational database | L1 | CO6 |
| 5C-9 | The primary storage is also referred as -<br><br>Volatile Storage<br>Non-volatile Storage<br>Seamless Storage<br>None of the above | L1 | CO6 |
| 5C-10 | Memory types that use ____ storage do not permanently store data.<br><br>Primary<br>Secondary<br>Tertiary<br>None | L3 | CO6 |
| 5C-11 | Which of the following is the type of data storage?<br><br>Primary<br>Secondary<br>Tertiary<br>All of the above | L1 | CO6 |
| 5C-12 | We can access records by using the ___ key.<br><br>Primary<br>Foreign<br>Alternate<br>Composite | L1 | CO6 |
| 5C-13 | Based on the type of file organization for a given set of records, we can determine the ___ of access.<br><br>Type<br>Frequency<br>Both A and B | L1 | CO6 |

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| | None of the above | | |
| 5C-14 | How many types of file organizations are there? | L1 | CO6 |
| 5C-15 | function is used to generate the ___ of the data blocks in this technique. Numbers | L3 | CO6 |

| | FILL IN THE BLANKS<br>½ MARK QUESTIONS | BT Level | Course Outcome |
|---|---|---|---|
| 5F-1 | | L2 | CO6 |
| 5F-2 | ngth records is simpler than that of files of ___ length records. | L1 | CO6 |
| 5F-3 | deleting records. | L1 | CO6 |
| 5F-4 | cords are stored. | L2 | CO6 |
| 5F-5 | 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 often uses the ___ key. | L1 | 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. | L1 | 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 system also results in the loss of data. | L1 | CO6 |
| 5F-11 | A B-tree of order m has maximum of children | **L3** | 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 |
| | **MATCH THE FOLLOWING<br>1 MARK QUESTIONS** | **BT Level** | **Course Outcome** |
| 5C-1 | (1) RAM (A) Static Random Access Memory<br>(2) DRAM (B) Random Access Memory<br>(3) SRAM (C) Dynamic Access Memory | 1 | CO6 |
| 5C-2 | (1) Sequential File Organization (A) Files are stored in tree like structure<br>(2) Heap File Organization (B) Files are stored in a sequential order<br>(3) Hash File Organization (C) Data in a file are stored in Blocks<br>(4) B+ File Organization (D) Uses Hash functions in finding a file | 2 | CO6 |
| 5C-3 | (1) Ordered Index (A) Index created on a Primary key<br>(2) Primary Index (B) Contains Search key value in data files<br>(3) Clustered Index (C) Index on sorted columns<br>(4) Dense Index (D) Index defined on ordered data files | 1 | CO6 |
| 5C-4 | (1) RAID 0 (A) Record error correction done<br>(2) RAID 1 (B) Strips data on to multiple disks<br>(3) RAID 2 (C) Uses mirroring techniques in sending data to RAID controller<br>(4) RAID 3 (D) Data is broken down into blocks | 1 | CO6 |
| 5C-5 | (1) Static Hashing (A) New data bucket allocated for same hash result<br>(2) Dynamic Hashing (B) Resultant data bucket address is always same<br>(3) Close Hashing (C) Data bucket grows or Shrinks | 2 | CO6 |

| | **PART B<br>5 MARKS QUESTIONS** | | |
|---|---|---|---|
| 5C-1 | Discuss the Index Data structure? | L2 | CO6 |
| 5C-2 | Discuss the Intuitions for tree Indexes? | L1 | CO6 |
| 5C-3 | 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? | L2 | CO6 |
| 5C-4 | Compare the hash based Indexing and Tree base Indexing? | L2 | CO6 |
| 5C-5 | What is over flow page? With a neat diagram, briefly describe ISAM Index structure? | L2 | CO6 |
| 5C-6 | Give a brief note on File organization and Indexing? | L6 | CO6 |
| 5C-7 | Enlighten about primary and secondary Indexes? | L4 | CO6 |

| | | | |
|---|---|---|---|
| 5C-8 | Explain B+ trees? Discuss about this Dynamic Index Structure? | L2 | CO6 |
| 5C-9 | Make clear Multi-key file organization in detail? | L5 | CO6 |
| 5C-10 | Write about fixed-length representation in detail? | L4 | CO6 |
| 5C-11 | Which of the three basic file organizations would you choose for a file where the most frequent operations are as follows,<br>Search for records based on a range of field values.<br>Perform insert and scans where the order of records does not matter.<br>Search for a record based on a particular field value. | L2 | CO6 |
| 5C-12 | Explain in detail about ISAM? | L2 | CO6 |
| 5C-13 | Compare and Contrast Extendible Hashing with Linear Hashing? | L4 | CO6 |
| 5C-14 | Compare I/O costs for all File Organizations? | L4 | CO6 |
| 5C-15 | Illustrate insertion and deletion of an element in B+ trees with example? | L6 | CO6 |