



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad-500043

INFORMATION TECHNOLOGY

TUTORIAL QUESTION BANK

| | | | | | |
|--------------------------|---------------------------------------|------------------|----------------|-------------------|----------------|
| Course Title | ADVANCED DATABASES | | | | |
| Course Code | AIT505 | | | | |
| Programme | B. Tech | | | | |
| Semester | V | | | | |
| Course Type | Elective | | | | |
| Regulation | IARE - R16 | | | | |
| Course Structure | Theory | | | Practical | |
| | Lectures | Tutorials | Credits | Laboratory | Credits |
| | 3 | - | 3 | - | - |
| Chief Coordinator | Mr. D. Rahul, Assistant Professor | | | | |
| Course Faculty | Mr. N. Bhaswanth, Assistant Professor | | | | |

COURSE OBJECTIVES:

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|--|---|
| The course should enable the students to: | |
| I | Define entity relationship model and transaction processing system. |
| II | Understand various storage structures for database. |
| III | Describe the distributed and parallel database processing. |
| IV | Describe object oriented database concepts and models. |
| V | Understand various advancements in database technology. |

COURSE OUTCOMES (COs):

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|------|--|
| CO 1 | Understand the concept of Active Databases in Starburst, Oracle, and DB2. |
| CO 2 | Analyze the concepts of Temporal and Object Databases-SQL. |
| CO 3 | Understand the Concepts of Relational calculi, relational algebra and recursion. |
| CO 4 | Explore the concept of Spatial, Text and Multimedia Databases. |
| CO 5 | Understand the concept of Uncertainty in Databases.. |

COURSE LEARNING OUTCOMES (CLOs):

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|-----------|--|
| AIT505.01 | Understand and explain the key ideas underlying database systems and the database approach to information storage and manipulation. |
| AIT505.02 | Design and implement database applications. |
| AIT505.03 | Understand the types of tasks involved in database administration and the facilities provided in a typical database system to support these tasks. |
| AIT505.04 | Design adequate backup, recovery and security measures for a database installation, and understand the facilities provided by typical database systems to support these tasks. |
| AIT505.05 | Define and use important temporal concepts, such as time point, time interval, and time-interval operators such as before, after and overlaps. |
| AIT505.06 | Understand the temporal data model at the conceptual level. |
| AIT505.07 | Describe some of the extensions to conventional query languages that have been proposed to support temporal query processing. |
| AIT505.08 | Critically assess the strengths and weaknesses of Object databases with respect to Relational systems. |
| AIT505.09 | Describe why Object databases appear to be such a good fit for a number of major growth areas in computing, such as Web-based and multimedia information systems. |
| AIT505.10 | Describe the strategy being adopted by major database supplier Oracle to address the apparent threat of Object database systems, and critically compare this approach with a pure Object technology approach |
| AIT505.11 | Formulate, using relational calculus solutions to a broad range of query problems |
| AIT505.12 | Identify a range of concepts, techniques and tools for creating and editing the interactive multimedia database |
| AIT505.13 | Identify the current and future issues related to multimedia technology to store information |
| AIT505.14 | Impart an overview of emerging data models like temporal, mobile and spatial databases |
| AIT505.15 | Understand the commercial relational database system (Oracle) by writing SQL using the system. |

TUTORIAL QUESTION BANK

| UNIT - I | | | | |
|-----------------------------------|--|-----------------------|-----------------|---------------------------------|
| ACTIVE DATABASES | | | | |
| Part - A (Short Answer Questions) | | | | |
| S No | QUESTIONS | Blooms Taxonomy Level | Course Outcomes | Course Learning Outcomes (CLOs) |
| 1 | Explain the active database and list of the advantages using active database? | Remember | CO 1 | AIT505.01 |
| 2 | List the applications of active database and explain any one of the application? | Remember | CO 1 | AIT505.02 |
| 3 | Discuss about the Starburst and write the suitable syntax? | Understand | CO 1 | AIT505.03 |
| 4 | Discuss about the Starburst and write the semantics of Starburst? | Understand | CO 1 | AIT505.01 |
| 5 | Which statement is used to create a trigger? | Remember | CO 1 | AIT505.02 |
| 6 | Discuss about the Oracle and write the semantics of Oracle? | Understand | CO 1 | AIT505.03 |
| 7 | What is abc in the following statement? CREATE TRIGGER abc (...) (...) ON def FOR EACH ROW ghi; | Understand | CO 1 | AIT505.01 |
| 8 | Discuss about the DB2 and write the semantics of DB2? | Understand | CO 1 | AIT505.02 |
| 9 | Explain about the integrity management and with suitable examples? | Remember | CO 1 | AIT505.03 |
| 10 | Discuss about the workflow management? | Understand | CO 1 | AIT505.01 |
| 11 | Explain about the triggers? | Remember | CO 1 | AIT505.02 |
| 12 | Enlist the disadvantages of query. | Remember | CO 1 | AIT505.03 |
| 13 | Discuss about Oracle and write the suitable syntax? | Understand | CO 1 | AIT505.01 |
| 14 | Which statement is used to remove a trigger? | Remember | CO 1 | AIT505.02 |
| 15 | Discuss about DB2 and write the suitable syntax? | Understand | CO 1 | AIT505.03 |
| 16 | List the Benefits of Active Technologies? | Understand | CO 1 | AIT505.01 |
| 17 | Write the steps of Rule Generation for Integrity Checking? | Remember | CO 1 | AIT505.01 |
| 18 | Write the advantages of Business Rules and Difficulties | Understand | CO 1 | AIT505.02 |
| 19 | Explain the rule debugging and monitoring | Remember | CO 1 | AIT505.03 |
| 20 | Explain about the rule modularization? | Understand | CO 1 | AIT505.01 |
| Part - B (Long Answer Questions) | | | | |
| 1 | Give the syntax for following statements and discuss briefly on: i) Starburst ii) Oracle iii) DB2 | Remember | CO 1 | AIT505.01 |
| 2 | Write the Semantics for following statements: i) Starburst ii) Oracle iii) DB2 | Understand | CO 1 | AIT505.02 |
| 3 | List and explain the Applications of Active Database with suitable examples? | Understand | CO 1 | AIT505.03 |
| 4 | Discuss about the Starburst rule Definition? Write the query for the following statement “salary of employees is not larger than the salary of the manager of their department”? | Understand | CO 1 | AIT505.01 |
| 5 | Write the query for the following statement “If the average salary of employees gets over 100, then reduces the salary of all employees by 10 %” using starburst rule? | Remember | CO 1 | AIT505.02 |
| 6 | Discuss about the Business Rules? Write the Case Study of Energy Management System using the business rules? | Understand | CO 1 | AIT505.01 |
| 7 | Explain the Design Principles for Active Databases? Give the suitable examples of using recursive rules? | Understand | CO 1 | AIT505.02 |
| 8 | Write the query for the following statement “If average salary of employees exceed 100, reduce salary of each employee by 10%” using recursive rules? | Understand | CO 1 | AIT505.01 |
| 9 | Discuss about Business Rules Advantages and Difficulties with suitable example of case study? | Remember | CO 1 | AIT505.02 |
| 10 | Write the syntax of the DB2 creates trigger statement and explain the DB2 | Understand | CO 1 | AIT505.03 |

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| | statement processing procedure? | | | |
| 11 | Explain about the rule modularization and write the program for order processing database? | Remember | CO 1 | AIT505.01 |
| 12 | Briefly described about rule debugging and monitoring of active database? | Remember | CO 1 | AIT505.02 |
| 13 | Explain about the IDEA Methodology of active database and draw the architecture of Tools? | Understand | CO 1 | AIT505.01 |
| 14 | Explain about the Active-Database Technology ?Event - Condition - Action Rules | Remember | CO 1 | AIT505.02 |
| 15 | Briefly described about Correctness of Evaluation of Interacting Rules and give the example of Non-Termination? | Understand | CO 1 | AIT505.03 |
| 16 | Define active databases? Explain the differences between relational prototype system and two relational systems. | Understand | CO 1 | AIT505.01 |
| 17 | Explain in details the IDEA methodologies with its purpose, ingredients and phases. Discuss the design tool supporting the methodologies. | Remember | CO 1 | AIT505.02 |
| 18 | Discuss in details about various applications related to active database system. | Understand | CO 1 | AIT505.01 |
| 19 | Explain the taxonomy of Active Databases in details. | Understand | CO 1 | AIT505.02 |
| 20 | Explain the differences between relational prototype system and two relational systems. | Remember | CO 1 | AIT505.01 |

Part - C (Problem Solving and Critical Thinking Questions)

| 1 | Write the syntax for finding supervisor “The supervisor of an employee must be older than the employee” Using a trigger. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Fname</th> <th>Lname</th> <th>Bdate</th> <th>Sex</th> <th>Salary</th> <th>HireDate</th> </tr> </thead> <tbody> <tr> <td>John</td> <td>Smith</td> <td>09-05-1955</td> <td>M</td> <td>30000</td> <td>01-01-1985</td> </tr> <tr> <td>Franklin</td> <td>Wong</td> <td>08-12-1945</td> <td>M</td> <td>40000</td> <td>01-01-1982</td> </tr> <tr> <td>Alicia</td> <td>Zelaya</td> <td>19-07-1958</td> <td>F</td> <td>25000</td> <td>01-01-1985</td> </tr> <tr> <td>Jennifer</td> <td>Wallace</td> <td>20-06-1931</td> <td>F</td> <td>43000</td> <td>01-01-1982</td> </tr> <tr> <td>Ramesh</td> <td>Narayan</td> <td>15-09-1952</td> <td>M</td> <td>38000</td> <td>01-01-1985</td> </tr> <tr> <td>Joyce</td> <td>English</td> <td>31-07-1962</td> <td>F</td> <td>25000</td> <td>01-01-1985</td> </tr> <tr> <td>Ahmad</td> <td>Jabbar</td> <td>29-03-1959</td> <td>M</td> <td>25000</td> <td>01-01-1985</td> </tr> <tr> <td>James</td> <td>Borg</td> <td>10-11-1927</td> <td>M</td> <td>55000</td> <td>01-01-1980</td> </tr> </tbody> </table> | Fname | Lname | Bdate | Sex | Salary | HireDate | John | Smith | 09-05-1955 | M | 30000 | 01-01-1985 | Franklin | Wong | 08-12-1945 | M | 40000 | 01-01-1982 | Alicia | Zelaya | 19-07-1958 | F | 25000 | 01-01-1985 | Jennifer | Wallace | 20-06-1931 | F | 43000 | 01-01-1982 | Ramesh | Narayan | 15-09-1952 | M | 38000 | 01-01-1985 | Joyce | English | 31-07-1962 | F | 25000 | 01-01-1985 | Ahmad | Jabbar | 29-03-1959 | M | 25000 | 01-01-1985 | James | Borg | 10-11-1927 | M | 55000 | 01-01-1980 | Understand | CO 1 | AIT505.01 |
|----------|--|------------|---------|-----------|------------|----------|----------|----------|-------|------------|---|-----------|------------|----------|------|------------|---|----------|------------|----------|--------|------------|----|---------|------------|----------|---------|------------|---|---------|------------|--------|---------|------------|----------|-------|------------|-------|-----------|------------|---------|----------|------------|-----------|--------|------------|---|-------|------------|-------|------|------------|---|-------|------------|------------|------|-----------|
| Fname | Lname | Bdate | Sex | Salary | HireDate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| John | Smith | 09-05-1955 | M | 30000 | 01-01-1985 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Franklin | Wong | 08-12-1945 | M | 40000 | 01-01-1982 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alicia | Zelaya | 19-07-1958 | F | 25000 | 01-01-1985 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jennifer | Wallace | 20-06-1931 | F | 43000 | 01-01-1982 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ramesh | Narayan | 15-09-1952 | M | 38000 | 01-01-1985 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joyce | English | 31-07-1962 | F | 25000 | 01-01-1985 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ahmad | Jabbar | 29-03-1959 | M | 25000 | 01-01-1985 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| James | Borg | 10-11-1927 | M | 55000 | 01-01-1980 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | State the syntax for satisfying the following statement “The location of a project must be one of the locations of its department.” Project Table: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>PName</th> <th>PNumber</th> <th>PLocation</th> <th>Dnumber</th> </tr> </thead> <tbody> <tr> <td>ProductX</td> <td>1</td> <td>Bellaire</td> <td>5</td> </tr> <tr> <td>ProductY</td> <td>2</td> <td>Sugarland</td> <td>5</td> </tr> <tr> <td>ProductZ</td> <td>3</td> <td>Houston</td> <td>5</td> </tr> <tr> <td>Computer</td> <td>10</td> <td>Stafford</td> <td>4</td> </tr> <tr> <td>Reo</td> <td>20</td> <td>Houston</td> <td>1</td> </tr> <tr> <td>New</td> <td>30</td> <td>Stafford</td> <td>4</td> </tr> </tbody> </table> DeptLocations Table: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Dnumber</th> <th>Dlocation</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Houston</td> </tr> <tr> <td>5</td> <td>Bellaire</td> </tr> <tr> <td>4</td> <td>Stafford</td> </tr> <tr> <td>5</td> <td>Sugarland</td> </tr> <tr> <td>5</td> <td>Houston</td> </tr> </tbody> </table> | PName | PNumber | PLocation | Dnumber | ProductX | 1 | Bellaire | 5 | ProductY | 2 | Sugarland | 5 | ProductZ | 3 | Houston | 5 | Computer | 10 | Stafford | 4 | Reo | 20 | Houston | 1 | New | 30 | Stafford | 4 | Dnumber | Dlocation | 1 | Houston | 5 | Bellaire | 4 | Stafford | 5 | Sugarland | 5 | Houston | Remember | CO 1 | AIT505.02 | | | | | | | | | | | | | | |
| PName | PNumber | PLocation | Dnumber | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ProductX | 1 | Bellaire | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ProductY | 2 | Sugarland | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ProductZ | 3 | Houston | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Computer | 10 | Stafford | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reo | 20 | Houston | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| New | 30 | Stafford | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dnumber | Dlocation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Houston | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Bellaire | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Stafford | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Sugarland | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Houston | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Definition and use of triggers in Oracle? Write the Trigger syntax in Oracle? | Remember | CO 1 | AIT505.03 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Definition and use of triggers in DB2? Write the Trigger syntax in DB2? | Understand | CO 1 | AIT505.01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Given the relational schema: EMPLOYEE(Name, Salary, DeptNum) DEPARTMENT(DeptNum, ManagerName) Define the following active rules in Oracle and DB2. 1. A rule that deletes all the employees belonging to a department when that department is deleted. | Remember | CO 1 | AIT505.02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| | <p>2. A rule that reacts to the deletion of the employee who is manager in a department by deleting that department and all its employees.</p> <p>3. A rule that, each time that salary of an employee becomes higher than that of his or her manager, makes that salary equal to that of the manager.</p> | | | |
| 6 | <p>Given the relational schema: STUDENT(Name, Subject, Supervisor) PROFESSOR(Name, Subject) COURSE(Title, Professor) EXAM(StudentName, CourseTitle)</p> <p>Describe the triggers that manager the following integrity constraints (business rules):</p> <ol style="list-style-type: none"> 1. Each student must work in the same area as his or her supervisor. 2. Each student must have taken at least three courses in the subject of his or her supervisor. 3. Each student must have taken the exam for the course taught by his or her supervisor. | Understand | CO 1 | AIT505.01 |
| 7 | <p>Given the relational schema: EMPLOYEE(Name, Salary, DeptNum) DEPARTMENT(DeptNum, ManagerName)</p> <p>Define the following active rules in Oracle and DB2.</p> <ol style="list-style-type: none"> 1. A rule that, each time the salaries are modified, verifies that there are no departments in which the average salary increases more than three percents and in this case cancels the modification. | Understand | CO 1 | AIT505.02 |
| 8 | <p>Given the relational schema: EMPLOYEE(Name, Salary, DeptNum) DEPARTMENT(DeptNum, ManagerName)</p> <p>Define the following active rules in Oracle and DB2.</p> <ol style="list-style-type: none"> 1. A rule that, each time that the salaries are modified, verifies their average and if it is higher than 50 thousand, deletes all the employees whose salaries have been modified and are higher than 80 thousand. | Remember | CO 1 | AIT505.03 |
| 9 | <p>A family tree represents the structure of a family. Show how the information of a family tree can be represented by means of a relational database, possibly starting with a simplified structure, in which only the male line or only the female line is represented (that is, only the offspring of the male or the female members of the family are represented).</p> | Understand | CO 1 | AIT505.01 |
| 10 | <p>Define a database schema that organizes the information necessary to generate the radio programmes page of a daily newspaper, with station, times and programme title; besides the name, include transmission frequency and the location of the radio station.</p> | Remember | CO 1 | AIT505.02 |

UNIT - II

TEMPORIAL AND OBJECT DATABASES

Part – A (Short Answer Questions)

| | | | | |
|---|---|------------|------|-----------|
| 1 | Discuss about the Temporal Database? | Understand | CO 2 | AIT505.04 |
| 2 | Explain about the Time Structure and draw the Structure? | Remember | CO 2 | AIT505.05 |
| 3 | Discuss the Time Density? | Understand | CO 2 | AIT505.06 |
| 4 | Briefly discuss about the TSQL2 Time ontology? | Remember | CO 2 | AIT505.04 |
| 5 | Explain the associating facts with time in temporal database? | Remember | CO 2 | AIT505.05 |
| 6 | Create table and Write the query for “What is Bob’s Salary?” | Understand | CO 2 | AIT505.06 |
| 7 | Explain about temporal join with suitable example? | Remember | CO 2 | AIT505.04 |
| 8 | List out the Time Data Types and explain? | Remember | CO 2 | AIT505.05 |

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| 9 | Explain the Temporal query languages? | Understand | CO 2 | AIT505.06 |
| 10 | Briefly described about the time ontology? And list out the data types? | Remember | CO 2 | AIT505.04 |
| 11 | Explain the data model in temporal database? | Understand | CO 2 | AIT505.05 |
| 12 | Discuss the temporal database constructs? | Understand | CO 2 | AIT505.06 |
| 13 | Discuss about the aggregates function with suitable example? | Remember | CO 2 | AIT505.04 |
| 14 | Briefly described about constructs and data model? | Understand | CO 2 | AIT505.05 |
| 15 | Discuss about the time ontology in temporal database? | Understand | CO 2 | AIT505.06 |
| 16 | Explain the time facts? | Understand | CO 2 | AIT505.04 |
| 17 | Create a employee table and find the employee date of birth? | Remember | CO 2 | AIT505.05 |
| 18 | Discuss about temporal data base and explain the time domain? | Understand | CO 2 | AIT505.06 |
| 19 | Explain about the Time Structure and Time Density? | Remember | CO 2 | AIT505.04 |
| 20 | Create a employee table and find the employee current salary? | Remember | CO 2 | AIT505.05 |
| Part - B (Long Answer Questions) | | | | |
| 1 | Summarize the phrase ‘The complexities of time in Temporal databases’, with suitable examples. | Remember | CO 2 | AIT505.04 |
| 2 | Discuss various types of commands which can be used for manipulating text in the T-SQL code. (i.e. for example, Replace a text string, Obtain a portion of the text etc.) | Understand | CO 2 | AIT505.05 |
| 3 | Briefly explain about time domain and associating facts with time of temporal database with example? | Understand | CO 2 | AIT505.06 |
| 4 | Explain about the temporal query language in temporal database with suitable example? | Understand | CO 2 | AIT505.04 |
| 5 | List out the temporal supports and transact-SQL supports? Explain? | Remember | CO 2 | AIT505.05 |
| 6 | What is Time stamped? Give the example suitable example for time stamped? | Understand | CO 2 | AIT505.05 |
| 7 | CREATE TABLE Lab Test (Name, Physician, TestID) and write the program for Patients who were the sole receivers of all tests ordered by a physician? | Remember | CO 2 | AIT505.06 |
| 8 | Explain the different Kinds of Tables and write the suitable syntax? | Remember | CO 2 | AIT505.04 |
| 9 | Discuss the language constructs in Transact-SQL with suitable example? | Understand | CO 2 | AIT505.06 |
| 10 | Summarize the Time ontology of temporal database and explain the data model with suitable example? | Remember | CO 2 | AIT505.04 |
| 11 | Explain the temporal query language and discuss any three temporal algebraic operators with example | Remember | CO 2 | AIT505.04 |
| 12 | Sketch the System Architecture of conventional DBMS and discuss the changes need to be done for adding Temporal Support. | Understand | CO 2 | AIT505.05 |
| 13 | What are temporal database? How they differ from conventional databases? | Remember | CO 2 | AIT505.05 |
| 14 | Write note on Time Ontology and Data Model of TSQL2 | Remember | CO 2 | AIT505.06 |
| 15 | Discuss the time density and explain about TSQL2 data model with example. | Understand | CO 2 | AIT505.04 |
| 16 | Explain the time domain and time data types of temporal database in details. | Remember | CO 2 | AIT505.05 |
| 17 | Write note on Time Data Types? Explain the Associating Facts with Time? | Understand | CO 2 | AIT505.05 |
| 18 | List out the Temporal Support Compiler and explain briefly. | Remember | CO 2 | AIT505.06 |
| 19 | Briefly discuss about Data Dictionary and Data Files. | Remember | CO 2 | AIT505.04 |
| 20 | Explain the following temporal support compilers i. Run-Time Evaluator ii. DDL Compiler iii. Query Compiler | Understand | CO 2 | AIT505.06 |
| Part - C (Problem Solving and Critical Thinking Questions) | | | | |
| 1 | Create a table using the attributes (name, address, city, and region) of employees living in INDIA. Write a Query to find the list of persons living in INDIA. | Remember | CO 2 | AIT505.04 |
| 2 | Nam Create a tables “employee” and “Employee Lifecycle”? Give the name of current employees who do not work currently in any department? | Understand | CO 2 | AIT505.05 |
| 3 | Create a tables “employee”, “Supervision” and “WorksOn”? Give the name of supervisors who had work on a project at some time | Understand | CO 2 | AIT505.06 |

| 4 | <p>Write the syntax for “Who has been on a drug for more than a total of six months”? Using following Scenario:</p> <ul style="list-style-type: none"> • Patient records include information on the drugs prescribed to each patient. • The valid time specifies the period(s) during which the drug was prescribed. • The valid time has a granularity of day (transaction time granularity is system defined): | Understand | CO 2 | AIT505.04 | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|---|------------|---------|-----------|-----------|------|-------|-----------|-------|------|-----------|--------|--------|-----------|--------|----|-----------|---|-----------|-----------|------|-----------|----------|-----------|-----------|-----------|----------|------------|------|-----------|
| 5 | Explain about Valid Time Projection and write the syntax of “What drugs was Melanie prescribed during 1994”using the patient record? | Remember | CO 2 | AIT505.04 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Create a table of “employee” and Write the syntax to “Find the employee's salary at a given time: e.g. the current one.” | Understand | CO 2 | AIT505.05 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | <p>Give the name of the managers living currently in Houston.</p> <p>Employee:</p> <table border="1"> <thead> <tr> <th>SSN</th> <th>FNAME</th> <th>LNAME</th> </tr> </thead> <tbody> <tr> <td>123456789</td> <td>John</td> <td>Smith</td> </tr> <tr> <td>888665555</td> <td>James</td> <td>Borg</td> </tr> <tr> <td>987654321</td> <td>Alicia</td> <td>Zelaya</td> </tr> </tbody> </table> <p>Department:</p> <table border="1"> <thead> <tr> <th>DNumber</th> <th>MgrSSN</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>888665555</td> </tr> <tr> <td>4</td> <td>987654321</td> </tr> </tbody> </table> <p>Employee Address:</p> <table border="1"> <thead> <tr> <th>SSN</th> <th>CITY</th> </tr> </thead> <tbody> <tr> <td>123456789</td> <td>Houston</td> </tr> <tr> <td>888665555</td> <td>Houston</td> </tr> <tr> <td>987654321</td> <td>Bellaire</td> </tr> </tbody> </table> | SSN | FNAME | LNAME | 123456789 | John | Smith | 888665555 | James | Borg | 987654321 | Alicia | Zelaya | DNumber | MgrSSN | 1 | 888665555 | 4 | 987654321 | SSN | CITY | 123456789 | Houston | 888665555 | Houston | 987654321 | Bellaire | Understand | CO 2 | AIT505.06 |
| SSN | FNAME | LNAME | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 123456789 | John | Smith | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 888665555 | James | Borg | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 987654321 | Alicia | Zelaya | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DNumber | MgrSSN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 888665555 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 987654321 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SSN | CITY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 123456789 | Houston | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 888665555 | Houston | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 987654321 | Bellaire | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | <p>Write the sql query “At any point in time an employee cannot work more than once in a project.In other terms (SSN,PNumber) is a sequenced primary key for WorksOn”</p> <p>WorksOn:</p> <table border="1"> <thead> <tr> <th>SSN</th> <th>PNUMBER</th> <th>HOURS</th> </tr> </thead> <tbody> <tr> <td>123456789</td> <td>1</td> <td>32.5</td> </tr> <tr> <td>123456789</td> <td>2</td> <td>7.5</td> </tr> <tr> <td>999887777</td> <td>10</td> <td>10</td> </tr> <tr> <td>999887777</td> <td>30</td> <td>30</td> </tr> <tr> <td>666884444</td> <td>3</td> <td>20</td> </tr> <tr> <td>453453453</td> <td>1</td> <td>20</td> </tr> </tbody> </table> | SSN | PNUMBER | HOURS | 123456789 | 1 | 32.5 | 123456789 | 2 | 7.5 | 999887777 | 10 | 10 | 999887777 | 30 | 30 | 666884444 | 3 | 20 | 453453453 | 1 | 20 | Remember | CO 2 | AIT505.04 | | | | | |
| SSN | PNUMBER | HOURS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 123456789 | 1 | 32.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 123456789 | 2 | 7.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 999887777 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 999887777 | 30 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 666884444 | 3 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 453453453 | 1 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Write the sql query for finding the name(s) of the employee(s) who had the less salary on 1/1/2010. | Understand | CO 2 | AIT505.05 | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Employee Table: | | | Salary Table: | | | |
|-----------------|--------------|-------------|---------------|------------|------------|------------|
| SSN | FName | LNam e | SSN | Salar y | From Date | To Date |
| 123456789 | John | Smith | 123456789 | 30000 | 01-01-1985 | 01-01-2079 |
| 333445555 | Frankli n | Wong | 333445555 | 40000 | 01-01-1982 | 01-01-1983 |
| 999887777 | Alicia | Zelaya | 333445555 | 45000 | 01-01-1983 | 01-01-2079 |
| 987654321 | Jennife r | Wallac | 999887777 | 25000 | 01-01-1985 | 01-01-2079 |
| 666884444 | Ram | Naraya | 987654321 | 43000 | 01-01-1982 | 01-01-2079 |
| 453453453 | Joyce | Englis h | 666884444 | 38000 | 01-01-1985 | 01-01-2079 |
| 987987987 | Ahmad | Jabbar | 453453453 | 25000 | 01-01-1985 | 01-01-2079 |
| 888665555 | James | Borg | 987987987 | 25000 | 01-01-1985 | 01-01-2079 |

| | | | | |
|----|--|----------|------|-----------|
| 10 | Write the sql query for finding the name(s) of the employee(s) who had the highest salary on 1/1/2002. | Remember | CO 2 | AIT505.06 |
|----|--|----------|------|-----------|

| Employee Table: | | | Salary Table: | | | |
|-----------------|--------------|-------------|---------------|------------|------------|------------|
| SSN | FNam e | LNam e | SSN | Salar y | From Date | To Date |
| 123456789 | John | Smith | 123456789 | 30000 | 01-01-1985 | 01-01-2079 |
| 333445555 | Frankli n | Wong | 333445555 | 40000 | 01-01-1982 | 01-01-1983 |
| 999887777 | Alicia | Zelaya | 333445555 | 45000 | 01-01-1983 | 01-01-2079 |
| 987654321 | Jennife r | Wallac | 999887777 | 25000 | 01-01-1985 | 01-01-2079 |
| 666884444 | Ram | Naraya | 987654321 | 43000 | 01-01-1982 | 01-01-2079 |
| 453453453 | Joyce | Englis h | 666884444 | 38000 | 01-01-1985 | 01-01-2079 |
| 987987987 | Ahmad | Jabbar | 453453453 | 25000 | 01-01-1985 | 01-01-2079 |
| 888665555 | James | Borg | 987987987 | 25000 | 01-01-1985 | 01-01-2079 |
| | | | 888665555 | 55000 | 01-01-1980 | 01-01-1981 |
| | | | 888665555 | 58000 | 01-01-1981 | 01-01-2079 |

| UNIT - III | | | | |
|-----------------------------------|--|------------|------|-----------|
| COMPLEX QUERIES AND REASONING | | | | |
| Part - A (Short Answer Questions) | | | | |
| 1 | Explain about the Datalog and with suitable example? | Understand | CO 3 | AIT505.07 |
| 2 | Briefly explain about the Tuple Relational Calculus (TRC)? | Remember | CO 3 | AIT505.08 |
| 3 | Write the syntax of first order logic | Understand | CO 3 | AIT505.09 |

| | | | | |
|---|--|------------|------|-----------|
| 4 | Discuss about the Relational Model vs Datalog? | Remember | CO 3 | AIT505.07 |
| 5 | Explain the operators and list out the Relational Operators? | Understand | CO 3 | AIT505.08 |
| 6 | Discuss about Minimal Model and Least Model? | Remember | CO 3 | AIT505.09 |
| 7 | Briefly discuss about the Fix Point Semantics? | Understand | CO 3 | AIT505.07 |
| 8 | Discuss about Relational Algebra (RA) and explain the set operators? | Remember | CO 3 | AIT505.08 |
| 9 | Explain the Least Fix Point of T_p and power of T_p ? | Understand | CO 3 | AIT505.09 |
| 10 | Explain the Rule-Rewriting Methods. | | | |
| | | | | |
| 11 | Discuss about the Positive program? | Understand | CO 3 | AIT505.07 |
| 12 | Briefly described about the Rule rewriting methods? | Remember | CO 3 | AIT505.09 |
| 13 | Explain the compilation and optimization? | Remember | CO 3 | AIT505.07 |
| 14 | Exemplify the Recursive queries in SQL? | Understand | CO 3 | AIT505.08 |
| 15 | Discuss about the Non-recursive programs? | Remember | CO 3 | AIT505.09 |
| 16 | Explain the Left-Linear and Right-Linear Recursion? | Remember | CO 3 | AIT505.07 |
| 17 | Discuss about the Magic Sets Method and give one example? | Understand | CO 3 | AIT505.07 |
| 18 | Exemplify the Restricting search via magic set? | Remember | CO 3 | AIT505.08 |
| 19 | Briefly described about the Counting Method? | Remember | CO 3 | AIT505.07 |
| 20 | Discuss about the Supplementary Magic Sets | | | |
| Part – B (Long Answer Questions) | | | | |
| 1 | State the Syntax and Semantics of Datalog Languages and discuss in detail about the Syntax of First-Order Logic and Datalog. | Understand | CO 3 | AIT505.07 |
| 2 | Explain about the relational database with suitable example with help of student and courses? | Remember | CO 3 | AIT505.08 |
| 3 | Discuss about Minimal Model and Least Model with suitable example? | Understand | CO 3 | AIT505.09 |
| 4 | Explain about the Negation in Datalog and with suitable example? | Remember | CO 3 | AIT505.07 |
| 5 | Discuss about Domain Relational Calculus and write the syntax differences in DRC? | Understand | CO 3 | AIT505.08 |
| 6 | Explain the algorithm for mapping a safe, non-recursive datalog program P into RA. | Understand | CO 3 | AIT505.07 |
| 7 | Explain the Relational Calculi and its flavors in detail. | Remember | CO 3 | AIT505.08 |
| 8 | State the Syntax and Semantics of Datalog Languages and discuss in detail about the Syntax of First-Order Logic and Datalog | Remember | CO 3 | AIT505.09 |
| 9 | Define Relational Calculus? Explain about types of Relational Calculus with their syntax's and give for example. | Understand | CO 3 | AIT505.07 |
| 10 | List out the various operators in Relational Algebra? Explain them briefly. | Understand | CO 3 | AIT505.07 |
| | | | | |
| 11 | Give the meaning of Rule-Rewriting Method. Illustrate the Left-Linear and Right-Linear Recursion with suitable examples. | Remember | CO 3 | AIT505.08 |
| 12 | Write the Algorithm Binding Passing analysis for Recursive Predicates? | Understand | CO 3 | AIT505.09 |
| 13 | Discuss about the Non-recursive Program and Recursive Predicates using Compilation and Optimization? | Remember | CO 3 | AIT505.07 |
| 14 | Write the Algorithm Construction of the Rule-Goal graph $rgg(P)$ for non-recursive program P? | Understand | CO 3 | AIT505.08 |
| 15 | Exemplify the Magic set and Counting Method using the Rule rewriting methods? Give the one example? | Understand | CO 3 | AIT505.09 |
| 16 | Write a short note on Datalog with suitable example. | Understand | CO 3 | AIT505.07 |
| 17 | Explain about Counting Method. Give advantages and disadvantages of the technique? | Remember | CO 3 | AIT505.08 |
| 18 | Discuss about Tuple Relational Calculus and Domain Relational Calculus with suitable example. | Understand | CO 3 | AIT505.09 |
| 19 | Explain about the Magic Sets Method? Discuss about the Supplementary Magic Sets with suitable example. | Understand | CO 3 | AIT505.07 |

| 20 | Explain the Recursive Queries and write the syntax of Recursive views in SQL3 | Remember | CO 3 | AIT505.07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|------------|------|-----------|------|-------|------|-----|----|--------|-------|----|--------|-------|----|--------|------|--|--|------|--------|-------|-----|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|------------|-------|-----------|------------|------|-----------|
| Part – C (Problem Solving and Critical Thinking) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Write a Datalog program to compute how many courses are required for a CS degree where an each CS senior student is missing. <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr><th colspan="3">Student</th></tr> <tr><th>Name</th><th>Major</th><th>Year</th></tr> </thead> <tbody> <tr><td>Joe</td><td>CS</td><td>Senior</td></tr> <tr><td>Jones</td><td>CS</td><td>Junior</td></tr> <tr><td>Black</td><td>EE</td><td>Junior</td></tr> </tbody> </table> <table border="1" style="display: inline-table;"> <thead> <tr><th colspan="3">Took</th></tr> <tr><th>Name</th><th>Course</th><th>Grade</th></tr> </thead> <tbody> <tr><td>Joe</td><td>CS123</td><td>2.7</td></tr> <tr><td>Jones</td><td>CS101</td><td>3.0</td></tr> <tr><td>Jones</td><td>CS143</td><td>3.3</td></tr> <tr><td>Black</td><td>CS101</td><td>2.7</td></tr> </tbody> </table> | Student | | | Name | Major | Year | Joe | CS | Senior | Jones | CS | Junior | Black | EE | Junior | Took | | | Name | Course | Grade | Joe | CS123 | 2.7 | Jones | CS101 | 3.0 | Jones | CS143 | 3.3 | Black | CS101 | 2.7 | Understand | CO 3 | AIT505.07 | | | |
| Student | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Name | Major | Year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joe | CS | Senior | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jones | CS | Junior | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Black | EE | Junior | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Took | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Name | Course | Grade | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joe | CS123 | 2.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jones | CS101 | 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jones | CS143 | 3.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Black | CS101 | 2.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Find the name of junior-level students who have taken both cs101 and cs143 <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr><th colspan="3">Student</th></tr> <tr><th>Name</th><th>Major</th><th>Year</th></tr> </thead> <tbody> <tr><td>Joe</td><td>CS</td><td>Senior</td></tr> <tr><td>Jones</td><td>CS</td><td>Junior</td></tr> <tr><td>Black</td><td>EE</td><td>Junior</td></tr> </tbody> </table> <table border="1" style="display: inline-table;"> <thead> <tr><th colspan="3">Took</th></tr> <tr><th>Name</th><th>Course</th><th>Grade</th></tr> </thead> <tbody> <tr><td>Joe</td><td>CS123</td><td>2.7</td></tr> <tr><td>Jones</td><td>CS101</td><td>3.0</td></tr> <tr><td>Jones</td><td>CS143</td><td>3.3</td></tr> <tr><td>Black</td><td>CS143</td><td>3.3</td></tr> <tr><td>Black</td><td>CS101</td><td>2.7</td></tr> </tbody> </table> | Student | | | Name | Major | Year | Joe | CS | Senior | Jones | CS | Junior | Black | EE | Junior | Took | | | Name | Course | Grade | Joe | CS123 | 2.7 | Jones | CS101 | 3.0 | Jones | CS143 | 3.3 | Black | CS143 | 3.3 | Black | CS101 | 2.7 | Remember | CO 3 | AIT505.08 |
| Student | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Name | Major | Year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joe | CS | Senior | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jones | CS | Junior | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Black | EE | Junior | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Took | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Name | Course | Grade | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joe | CS123 | 2.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jones | CS101 | 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jones | CS143 | 3.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Black | CS143 | 3.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Black | CS101 | 2.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Write the query for “Junior-level Students who did not take course cs143”using Negation? <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr><th colspan="3">Student</th></tr> <tr><th>Name</th><th>Major</th><th>Year</th></tr> </thead> <tbody> <tr><td>Joe</td><td>CS</td><td>Senior</td></tr> <tr><td>Jones</td><td>CS</td><td>Junior</td></tr> <tr><td>Black</td><td>EE</td><td>Junior</td></tr> </tbody> </table> <table border="1" style="display: inline-table;"> <thead> <tr><th colspan="3">Took</th></tr> <tr><th>Name</th><th>Course</th><th>Grade</th></tr> </thead> <tbody> <tr><td>Joe</td><td>CS123</td><td>2.7</td></tr> <tr><td>Jones</td><td>CS101</td><td>3.0</td></tr> <tr><td>Jones</td><td>CS143</td><td>3.3</td></tr> <tr><td>Black</td><td>CS143</td><td>3.3</td></tr> <tr><td>Black</td><td>CS101</td><td>2.7</td></tr> </tbody> </table> | Student | | | Name | Major | Year | Joe | CS | Senior | Jones | CS | Junior | Black | EE | Junior | Took | | | Name | Course | Grade | Joe | CS123 | 2.7 | Jones | CS101 | 3.0 | Jones | CS143 | 3.3 | Black | CS143 | 3.3 | Black | CS101 | 2.7 | Understand | CO 3 | AIT505.09 |
| Student | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Name | Major | Year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joe | CS | Senior | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jones | CS | Junior | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Black | EE | Junior | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Took | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Name | Course | Grade | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joe | CS123 | 2.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jones | CS101 | 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jones | CS143 | 3.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Black | CS143 | 3.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Black | CS101 | 2.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Create a tables of student (Name, Major, Year), Took (Name, Course, Grade) and write the query for “Find the senior students who are NOT missing any requirement” using Double Negation? | Remember | CO 3 | AIT505.07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Given the relations: employee(name,salary,deptno) department (deptno, deptname, address) Explain which query cannot be expressed using the basic relational algebra operations? | Understand | CO 3 | AIT505.08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06 | Explain how the magic sets and related methods are also applicable to programs that have the binding passing property, but not the unique binding passing property. Apply the magic sets method to the following example: ?sg(marc; Who). sg(X; Y) <-- parent(XP; X); sg(YP; XP); parent(YP; Y). sg(A,A) | Understand | CO 3 | AIT505.08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| 07 | Write the Program on Recursive View in SQL using following Table. | Understand | CO 3 | AIT505.09 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|--|------------|------|-----------|-----------|----------|--|--|------------|----------|------|------|------|---------|-----|----------|---------|----|----|------|-------|---|----------|----------|----|---|------|-------|---|-----------|----------|----|---|-------|----------|---|-----------|---------|----|----|-------|-----------|---|------|---------|----|----|-------|------|---|-----|---------|----|----|-------|-------|----|--|--|--|
| | <table border="1"> <thead> <tr> <th colspan="4">Part_Cost</th> <th colspan="3">Assembly</th> </tr> <tr> <th>BASIC-PART</th> <th>SUPPLIER</th> <th>COST</th> <th>TIME</th> <th>PART</th> <th>SUBPART</th> <th>QTY</th> </tr> </thead> <tbody> <tr> <td>Top_tube</td> <td>Cinelli</td> <td>20</td> <td>14</td> <td>Bike</td> <td>frame</td> <td>1</td> </tr> <tr> <td>Top_tube</td> <td>columbus</td> <td>15</td> <td>6</td> <td>Bike</td> <td>wheel</td> <td>2</td> </tr> <tr> <td>Down_tube</td> <td>columbus</td> <td>10</td> <td>6</td> <td>frame</td> <td>Top_tube</td> <td>1</td> </tr> <tr> <td>Head_tube</td> <td>Cinelli</td> <td>20</td> <td>14</td> <td>frame</td> <td>Down_tube</td> <td>1</td> </tr> <tr> <td>fork</td> <td>Cinelli</td> <td>40</td> <td>14</td> <td>frame</td> <td>fork</td> <td>1</td> </tr> <tr> <td>Hub</td> <td>suntour</td> <td>10</td> <td>15</td> <td>wheel</td> <td>Spoke</td> <td>36</td> </tr> </tbody> </table> | Part_Cost | | | | Assembly | | | BASIC-PART | SUPPLIER | COST | TIME | PART | SUBPART | QTY | Top_tube | Cinelli | 20 | 14 | Bike | frame | 1 | Top_tube | columbus | 15 | 6 | Bike | wheel | 2 | Down_tube | columbus | 10 | 6 | frame | Top_tube | 1 | Head_tube | Cinelli | 20 | 14 | frame | Down_tube | 1 | fork | Cinelli | 40 | 14 | frame | fork | 1 | Hub | suntour | 10 | 15 | wheel | Spoke | 36 | | | |
| Part_Cost | | | | Assembly | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BASIC-PART | SUPPLIER | COST | TIME | PART | SUBPART | QTY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Top_tube | Cinelli | 20 | 14 | Bike | frame | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Top_tube | columbus | 15 | 6 | Bike | wheel | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Down_tube | columbus | 10 | 6 | frame | Top_tube | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Head_tube | Cinelli | 20 | 14 | frame | Down_tube | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| fork | Cinelli | 40 | 14 | frame | fork | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hub | suntour | 10 | 15 | wheel | Spoke | 36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 08 | Create a tables of Part_Cost (BASIC-PART, SUPPLIER, COST, TIME), Assembly (PART, SUBPART, QTY) and write the query for "find the parts using 'top_tube'" using recursive queries? | Understand | CO 3 | AIT505.07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 09 | Create a tables of Part_Cost (BASIC-PART, SUPPLIER, COST, TIME), Assembly (PART, SUBPART, QTY) and write the query for "Materialization of the view of recursive view?" | Understand | CO 3 | AIT505.08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Based on datalog, the following schema is given : Purchase(pid, product, price, quantity) Product(pname, manufacturer) I. Find all products under 9.99 II. Find all manufacturers that manufacture some products under 9.99 III. Find manufacturers that manufacture products both < 9.99 and > 999.99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

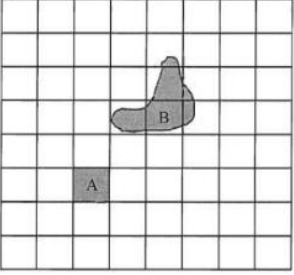
UNIT - IV

SPATIAL, TEXT AND MULTIMEDIA DATABASES

Part – A (Short Answer Questions)

| | | | | |
|---|---|------------|------|-----------|
| 1 | Explain about Traditional Indexing Methods? | Understand | CO 4 | AIT505.10 |
| 2 | Briefly described the secondary key and give me one example? | Understand | CO 4 | AIT505.11 |
| 3 | Discuss about Inverted Files and Grid File? | Remember | CO 4 | AIT505.10 |
| 4 | Explain and Illustrate the K-D Tree? | Understand | CO 4 | AIT505.12 |
| 5 | Briefly describe about Spatial Access Methods (SAMs)? | Understand | CO 4 | AIT505.11 |
| 6 | List out the Spatial Access Methods (SAMs) and explain? | Remember | CO 4 | AIT505.10 |
| 7 | List out the Text Retrieval and explain Signature Files? | Remember | CO 4 | AIT505.11 |
| 8 | Discus about Handling Points and Handling Regions? | Remember | CO 4 | AIT505.10 |
| 9 | Briefly described about Text Retrieval and The Queries can be Classified? | Understand | CO 4 | AIT505.11 |
| 10 | List out the Text Retrieval and explain Full Text Scanning? | Remember | CO 4 | AIT505.10 |
| 11 | Explain the Space Filling Curves and draw the Z-ordering square? | Understand | CO 4 | AIT505.12 |
| 12 | Briefly described about Signature file with good example? | Remember | CO 4 | AIT505.12 |
| 13 | List out the Text Retrieval and explain Inversion? | Remember | CO 4 | AIT505.10 |
| 14 | Discus about the Vector Space Model and Clustering? | Understand | CO 4 | AIT505.11 |
| 15 | Explain about Traditional Indexing Methods? | Understand | CO 4 | AIT505.12 |
| 16 | Briefly described the secondary key and give me one example? | Remember | CO 4 | AIT505.10 |
| 17 | Discuss about Inverted Files and Grid File? | Understand | CO 4 | AIT505.12 |
| 18 | Explain and Illustrate the K-D Tree? | Understand | CO 4 | AIT505.11 |
| 19 | Explain the classes of the multimedia database | | | |
| 20 | Describe the Repository application in multimedia database | | | |
| Part – B (Long Answer Questions) | | | | |
| 1 | Briefly described about 1-D Time Series and the 2-D Color Images and with suitable example? | Remember | CO 4 | AIT505.10 |

| | | | | |
|---|---|------------|------|-----------|
| 2 | List out the Spatial Access Methods (SAMs) and Space Filling Curves with Suitable example? | Remember | CO 4 | AIT505.11 |
| 3 | Explain about Traditional Indexing Methods? Briefly described the secondary key and give me one example? | Understand | CO 4 | AIT505.10 |
| 4 | Briefly explain the following a) Secondary Key b) Inverted File c) Grid File | Remember | CO 4 | AIT505.11 |
| 5 | Briefly described about Text Retrieval? Explain Vector Space Model and Clustering? | Remember | CO 4 | AIT505.10 |
| 6 | Explain about the Multimedia Indexing method? Discuss about 1-D Time Series with suitable example? | Understand | CO 4 | AIT505.12 |
| 7 | List out the 2-D Color Images and Explain Image Futures and Distance Function? | Remember | CO 4 | AIT505.10 |
| 8 | Discuss about Sub pattern Matching and Sketch of the Approach - ST-Index with suitable example? | Understand | CO 4 | AIT505.12 |
| 9 | Briefly explain the following a) Full Text Scanning b) Inversion c)Signature Files | Remember | CO 4 | AIT505.10 |
| 10 | Discus about 1-D Time Series and the 2-D Color Images and Advantages and Disadvantages? | Understand | CO 4 | AIT505.11 |
| 11 | Define Multimedia? List out traditional indexing methods? Explain about spatial access method in detail. | Understand | CO 4 | AIT505.12 |
| 12 | Discuss about multimedia system and its applications. Give the meaning for secondary keys and text retrieval with examples. | Remember | CO 4 | AIT505.10 |
| 13 | Define Multimedia? Discuss the various types of Access Methods for multimedia objects. | Understand | CO 4 | AIT505.11 |
| 14 | Discuss about Special Access Methods (SAMs) in detail. | Understand | CO 4 | AIT505.12 |
| 15 | Discuss the Generic Multimedia object indexing in details. | Remember | CO 4 | AIT505.10 |
| 16 | Explain Vector Space Model and Clustering? Discuss the various types of Access Methods for multimedia objects. | Understand | CO 4 | AIT505.11 |
| 17 | Explain the secondary keys? Discuss about text retrieval with examples. | Understand | CO 4 | AIT505.12 |
| 18 | Briefly described about 2-D Color Images and with suitable example? | Remember | CO 4 | AIT505.10 |
| 19 | Briefly explain the following i. Sub pattern Matching ii. B-tree | Understand | CO 4 | AIT505.11 |
| 20 | Elaborate 2-D color images with their characteristics. | Understand | CO 4 | AIT505.12 |
| Part – C (Problem Solving and Critical Thinking) | | | | |
| 1 | Consider the following table: Country(name: String, pop: number, boundary: POLYGON) Where for each country, we record its name, population, and boundary. Also assume that country name is a primary key. Write an SQL-like quarry language for “List the name, population and area of each country in the country table”? | Understand | CO 4 | AIT505.10 |
| 2 | Consider the following table: Country(name: String, pop: number, boundary: POLYGON) Where for each country, we record its name, population, and boundary. Also assume that country name is a primary key. Write an SQL-like quarry language for" Find all the names of countries that are neighbors of the United Kingdom (UK)."? | Understand | CO 4 | AIT505.11 |
| 3 | Explain the Space filling Curves? Let the 8*8 grid in the following figures represent the maximum level of space decommission. Find the binary Z-value to best approximate the two objects in the following figure. You can use up to 4 Z-values for one object. | Understand | CO 4 | AIT505.12 |

| | | | | |
|---|---|------------|------|-----------|
| |  | | | |
| 4 | Explain about the Multimedia Indexing method? Discuss about Sub pattern Matching and Sketch of the Approach - ST-Index with suitable example? | Understand | CO 4 | AIT505.10 |
| 5 | Briefly described about Text Retrieval? Explain Vector Space Model and Clustering? Explain about the Multimedia Indexing method? | Remember | CO 4 | AIT505.11 |
| 6 | Explain the 1-D Time Series and List out the Advantages and Disadvantages.. | Understand | CO 4 | AIT505.10 |
| 7 | Explain Vector Space Model and Clustering? List out traditional indexing methods? | Remember | CO 4 | AIT505.11 |
| 8 | Explain about spatial access method in detail? Discuss the Space Filling Curves with Suitable example? | Understand | CO 4 | AIT505.10 |
| 9 | Explain the 1-D Time Series and the 2-D Color Images? List out the Advantages and Disadvantages of 2-D Color Images? | Remember | CO 4 | AIT505.11 |
| 10 | Discuss about the B ⁺ -tree?Write the syntax of B ⁺ Tree index SQL. | Understand | CO 4 | AIT505.10 |
| UNIT - V | | | | |
| UNCERTAINTY IN DATABASES AND KNOWLEDGE BASES | | | | |
| Part - A (Short Answer Questions) | | | | |
| 1 | Explain about Models of Uncertainty database? | Understand | CO 5 | AIT505.13 |
| 2 | Briefly described about uncertainty database in image database? | Remember | CO 5 | AIT505.14 |
| 3 | Described about uncertainty database in temporal database? | Understand | CO 5 | AIT505.13 |
| 4 | Discuss about the uncertainty database in Null-Value? | Understand | CO 5 | AIT505.14 |
| 5 | List out the models of uncertainty database? | Remember | CO 5 | AIT505.15 |
| 6 | Explain the Fuzzy Sets and Fuzzy logic with suitable example? | Understand | CO 5 | AIT505.14 |
| 7 | Discuss about Lattice-Based Approaches and Lattices? | Remember | CO 5 | AIT505.13 |
| 8 | Write about the Relationship to Fuzzy logic? | Understand | CO 5 | AIT505.14 |
| 9 | Explain the Independence and Ignorance? | Understand | CO 5 | AIT505.15 |
| 10 | Write the Probability Theory in models of uncertainty? | Remember | CO 5 | AIT505.14 |
| 11 | Explain the Uncertainty in Relational Databases? | Understand | CO 5 | AIT505.13 |
| 12 | Briefly described about Lattice-Based Relational Databases? | Remember | CO 5 | AIT505.15 |
| 13 | Write the Querying of Lattice-Based Database? | Understand | CO 5 | AIT505.14 |
| 14 | Discuss about Probabilistic Relational Databases? | Remember | CO 5 | AIT505.13 |
| 15 | Explain the Converting of Probabilistic Tuples to Annotated Tuples? | Understand | CO 5 | AIT505.15 |
| 16 | Explain the Manipulating Annotated Relations? With Suitable example? | Understand | CO 5 | AIT505.14 |
| 17 | Explain about the Integrity Constraints Uncertainty database | Understand | CO 5 | AIT505.14 |
| 18 | Describe the relational database in Uncertainty database | Remember | CO 5 | AIT505.13 |
| 19 | Define attribute in Uncertainty database | Understand | CO 5 | AIT505.15 |
| 20 | Explain the Multilevel Index in Uncertainty database | Understand | CO 5 | AIT505.14 |
| Part - B (Long Answer Questions) | | | | |
| 1 | List out the Probabilistic Relational Databases and explain the Converting the Probabilistic Tuples to Annotated Tuples? | Remember | CO 5 | AIT505.13 |
| 2 | Briefly described about Lattice-Based Approaches and with suitable example? | Remember | CO 5 | AIT505.14 |
| 3 | Explain about Models of Uncertainty database? Briefly described about uncertainty database in image database? | Understand | CO 5 | AIT505.15 |
| 4 | Briefly described about uncertainty database in image database and Temporal Databases? | Remember | CO 5 | AIT505.13 |

| | | | | |
|----|--|------------|------|-----------|
| 5 | Discuss the models of uncertainty database with Relational to Fuzzy Logic? | Understand | CO 5 | AIT505.15 |
| 6 | List out the Probabilistic Relational Databases and explain Manipulating Annotated Relations? | Understand | CO 5 | AIT505.14 |
| 7 | Briefly described about Probability Theory with Independence and Ignorance? | Remember | CO 5 | AIT505.13 |
| 8 | Explain the Uncertainty in Databases and knowledge Bases? | Understand | CO 5 | AIT505.13 |
| 9 | Briefly described about Models of Uncertainty in Null-Values and Image Databases with suitable examples | | CO 5 | |
| 10 | List out the models of uncertainty database and Lattice-Based Approaches? | Understand | CO 5 | AIT505.13 |
| 11 | Explain the Uncertainty in Image Database and Temporal Database with example. | Understand | CO 5 | AIT505.15 |
| 12 | Discuss the various Models of Uncertainty in detail. | Remember | CO 5 | AIT505.14 |
| 13 | Discuss in details about Lattice based RDBMS and give the notations and selection relation with examples. | Understand | CO 5 | AIT505.13 |
| 14 | State and prove the models of Uncertainty with suitable examples. I. Fuzzy logic II. Fuzzy Sets | Remember | CO 5 | AIT505.15 |
| 15 | State and prove the models of Uncertainty with suitable examples. I. Probability Theory II. Fuzzy logic | Understand | CO 5 | AIT505.14 |
| 16 | Briefly described about uncertainty database in image database? List out the models of uncertainty database? | Remember | CO 5 | AIT505.13 |
| 17 | Discuss about Probabilistic Relational Databases? Explain the Manipulating Annotated Relations? With Suitable example? | Understand | CO 5 | AIT505.15 |
| 18 | Explain the Converting of Probabilistic Tuples to Annotated Tuples? Define attribute in Uncertainty database | Remember | CO 5 | AIT505.14 |
| 19 | Explain the Fuzzy Sets and Fuzzy logic with suitable example? | Understand | CO 5 | AIT505.13 |
| 20 | State and prove the models of Uncertainty with suitable examples of Probability Theory and Fuzzy Sets | Remember | CO 5 | AIT505.15 |

Part – C (Problem Solving and Critical Thinking)

| 1 | Create a table using the attributes (File, Person, LB, UB, and Salary) and Find all Pictures of people making over \$100,000 per year where the pictures correctly identify the person in question with over 70% Probability? | Understand | CO 5 | AIT505.15 | | | | | | | | | | | | | | | | | | | | | |
|---------|--|------------|--------|-----------|---------|------------|-----|---------|-----------|-----|---------|-------------|---|---------|-----------|---|---------|------|-----|---------|------|----|------------|------|-----------|
| 2 | Find people who appear in the face database with certainty over 50% using following table? <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>File</th> <th>Person</th> <th>Unc</th> </tr> </thead> <tbody> <tr> <td>Im1.gif</td> <td>Mark Bloom</td> <td>0.6</td> </tr> <tr> <td>Im1.gif</td> <td>Ted Lewis</td> <td>0.8</td> </tr> <tr> <td>Im2.gif</td> <td>Mark Bloom.</td> <td>1</td> </tr> <tr> <td>Im2.gif</td> <td>Ted Lewis</td> <td>1</td> </tr> <tr> <td>Im3.gif</td> <td>Lynn</td> <td>0.4</td> </tr> <tr> <td>In3.gif</td> <td>Elsa</td> <td>0.</td> </tr> </tbody> </table> | File | Person | Unc | Im1.gif | Mark Bloom | 0.6 | Im1.gif | Ted Lewis | 0.8 | Im2.gif | Mark Bloom. | 1 | Im2.gif | Ted Lewis | 1 | Im3.gif | Lynn | 0.4 | In3.gif | Elsa | 0. | Understand | CO 5 | AIT505.13 |
| File | Person | Unc | | | | | | | | | | | | | | | | | | | | | | | |
| Im1.gif | Mark Bloom | 0.6 | | | | | | | | | | | | | | | | | | | | | | | |
| Im1.gif | Ted Lewis | 0.8 | | | | | | | | | | | | | | | | | | | | | | | |
| Im2.gif | Mark Bloom. | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| Im2.gif | Ted Lewis | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| Im3.gif | Lynn | 0.4 | | | | | | | | | | | | | | | | | | | | | | | |
| In3.gif | Elsa | 0. | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Briefly described about Probabilistic Relational Databases and List out and Explain the Converting the Probabilistic Tuples to Annotated Tuples with suitable examples? | Remember | CO 5 | AIT505.14 | | | | | | | | | | | | | | | | | | | | | |
| 4 | Explain the Uncertainty in Image Databases and Temporal Databases and Null-Value with suitable examples? | Understand | CO 5 | AIT505.13 | | | | | | | | | | | | | | | | | | | | | |
| 5 | Briefly described about Lattice-Based Relational Databases and with suitable example in Projection, Union and Intersection? | Remember | CO 5 | AIT505.14 | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | |
|---------|--|-------------|-----|------------|------|-----------|
| 6 | Find people who appear in the face database with certainty over 50% | | | Understand | CO 5 | AIT505.13 |
| | File | Person | Unc | | | |
| | Im1.gif | Mark Bloom | 0.6 | | | |
| | Im1.gif | Ted Lewis | 0.8 | | | |
| | Im2.gif | Mark Bloom. | 1 | | | |
| | Im2.gif | Ted Lewis | 1 | | | |
| | Im3.gif | Lynn | 0.4 | | | |
| In3.gif | Elsa | 0. | | | | |
| 7 | Create a table using the attributes (File, Person, LB, UB, and Salary) and Using the ignorance strategy for conjunction, find all pictures of people making over \$100,000 per year where the pictures correctly identify the person in question with over 70% probability | | | Remember | CO 5 | AIT505.14 |
| 8 | Briefly described about Querying Probabilistic Databases in Uncertainty database. | | | Understand | CO 5 | AIT505.13 |
| 9 | State and prove the models of Uncertainty with suitable examples I. Selection II. Projection III. Difference | | | Remember | CO 5 | AIT505.14 |
| 10 | State and prove the models of Uncertainty with suitable examples I. Cartesian Product II. Union III. Compaction | | | Understand | CO 5 | AIT505.13 |

Prepared by:

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