**Coimbatore Institute of Technology, Coimbatore-14**

**Department of Computer Science and Engineering**

**Course: B.E CSE AY: December 2019 –May 2020**

**Sem: IV Total Marks: 50**

**Date:10th, Febuary, 2020 Duration: 2 Hours**

**15CI07 –DATABASE MANAGEMENT SYSTEMS**

**Mid Semester Test – I**

Course Instructor: A.Punidha

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| **COURSE OUTCOMES** | |
| CO1 | *Knowledge in basic concepts and the architecture of database management systems, data models, relational database theory and the features of SQL queries.* |
| CO2 | *Master the sound design principles of logical design by using ER modeling and normalization concepts.* |

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| **ANSWER ALL QUESTIONS(20 Marks)** | | | | |
| **PART A** | | **BT** | **CO** | **MARKS** |
|  | **Which of the following queries cannot be expressed using the basic relational algebra operations (U, -, x, π, σ, p)? (GATE CS 2000)**  (a) Department address of every employee (b) Employees whose name is the same as their department name (c) The sum of all employees’ salaries (d) All employees of a given department | AN | CO1 | 1 |
|  | Given the basic ER and relational models, which of the following is INCORRECT?  GATE CS 2012  **(A)** An attribute of an entity can have more than one value **(B)** An attribute of an entity can be composite **(C)** In a row of a relational table, an attribute can have more than one value **(D)** In a row of a relational table, an attribute can have exactly one value or a NULL value | U | CO1 | 1 |
|  | Consider the following schema :  Sailors (sid, sname, rating, age)  Boats (bid, bname, colour)  Reserves (sid, bid, day)  Two boats can have the same name but the colour differentiates them. The two relations  ρ (Tempsids, (Ⲡ  sid, bid  Reserves)/(Ⲡ bid ( σ bname ='Ganga' Boats))),  Ⲡ sname (Tempsids ⋈ Sailors)  If / is division operation, the above set of relations represents the query  **(A) Names of sailors who have reserved all boats called *Ganga*** **(B)** Names of sailors who have not reserved any *Ganga*boat **(C)** Names of sailors who have reserved at least one *Ganga*boat **(D)** Names of sailors who have reserved at most one *Ganga* boat | U | CO1 | 2 |
|  | Consider the following relational schema:  **Suppliers(sid:integer, sname:string, city:string, street:string)**  **Parts(pid:integer, pname:string, color:string)**  **Catalog(sid:integer, pid:integer, cost:real)**  Consider the following relational query on the above database: [**GATE-CS-2009**](https://www.geeksforgeeks.org/gate-quiz-gq/gate-cs-2009-gq/)  SELECT S.sname  FROM Suppliers S  WHERE S.sid NOT IN (SELECT C.sid  FROM Catalog C  WHERE C.pid NOT IN (SELECT P.pid  FROM Parts P  WHERE P.color<> 'blue'))  Assume that relations corresponding to the above schema are not empty. Which one of the following is the correct interpretation of the above query? **(A)** Find the names of all suppliers who have supplied a non-blue part. **(B)** Find the names of all suppliers who have not supplied a non-blue part. **(C)** Find the names of all suppliers who have supplied only blue parts. **(D) Find the names of all suppliers who have not supplied only blue parts.** | AN | CO2 | 2 |
|  | Consider the table employee(empId, name, department, salary) and the two queries Q1 ,Q2 below. Assuming that department 5 has more than one employee, and we want to find the employees who get higher salary than anyone in the department 5, which one of the statements is TRUE for any arbitrary employee table? GATE-CS-2007  Q1 : Select e.empId  From employee e  Where not exists  (Select \* From employee s where s.department = “5” and  s.salary >=e.salary)  Q2 : Select e.empId  From employee e  Where e.salary > Any  (Select distinct salary From employee s Where s.department = “5”)  **(A) Q1 is the correct query** **(B)** Q2 is the correct query **(C)** Both Q1 and Q2 produce the same answer. **(D)** Neither Q1 nor Q2 is the correct query | U | CO1 | 2 |
|  | Select operation in SQL is equivalent to GATE-CS-2015 **(A)** the selection operation in relational algebra **(B)** the selection operation in relational algebra, except that select in SQL retains duplicates **(C)** the projection operation in relational algebra **(D) the projection operation in relational algebra, except that select in SQL retains duplicates** | AN | CO2 | 1 |
|  | Which of the following is/are correct? GATE CS 1999  **(A)** An SQL query automatically eliminates the duplicates **(B)** An SQL query will not work if there are no indexes on the relations **(C)** SQL permits attribute names to be repeated in the same relation **(D) None of the above** | AN | CO2 | 1 |
|  | Which of the following is/are true with reference to ‘view’ in DBMS ? (a) A ‘view’ is a special stored procedure executed when certain event occurs. (b) A ‘view’ is a virtual table, which occurs after executing a pre-compiled query. code: **(A)** Only (a) is true **(B) Only (b) is true** **(C)** Both (a) and (b) are true **(D)** Neither (a) nor (b) are true | U | CO2 | 1 |
|  | An Assertion is a predicate expressing a condition we wish database to always satisfy. The correct syntax for Assertion is : UGC NET CS 2015 **(A)CREATE ASSERTION ‘ASSERTION Name’ CHECK ‘Predicate’** **(B)**CREATE ASSERTION ‘ASSERTION Name’ **(C)**CREATE ASSERTION, CHECK Predicate **(D)** SELECT ASSERTION | AN | CO1 | 1 |
|  | List the types of Database users. | AN | CO2 | 2 |
|  | List the types of Big Data. | AN | CO1 | 2 |
|  | Differentiate two tier and three tier architecture.  D | U | CO1 | 2 |
|  | Explain composite and multivalued attributes | AN | CO1 | 2 |

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| **PART B (10 X 3 Marks = 30 Marks)** | | | **BT** | **CO** | **MARKS** |
| **11.** | i) | In an inventory management system implemented at a trading corporation, there are several tables designed to hold all the information. Amongst these, the following two tables hold information on which items are supplied by which suppliers, and which warehouse keeps which items along with the stock-level of these items. Gate IT 2005  Supply = (supplierid, itemcode) Inventory = (itemcode, warehouse, stocklevel)  For a specific information required by the management, following SQL query has been written  Write a query For the warehouse at Nagpur, find all suppliers who supply two or more items  Answer:  Select distinct STMP.supplierid  From Supply as STMP  Where not unique (Select ITMP.supplierid  From Inventory, Supply as ITMP  Where STMP.supplierid = ITMP.supplierid  And ITMP.itemcode = Inventory.itemcode  And Inventory.warehouse = 'Nagpur'); | AP | CO2 | 5 |
| ii) | With neat sketch explain the database archicture. | U | CO2 | 4 |
| **(OR)** | | | | | |
| **12.** | i) | Write the HTML program to display following output: **GATE 2009**   |  |  |  | | --- | --- | --- | | ab | cd | | | ef | gh | | ik | | | AP | CO2 | 5 |
| ii) | A HTML form is to be designed to enable purchase of office stationery. Required items are to be selected (checked). Credit card details are to be entered and then the submit button is to be pressed. Which method would be appropriate for sending the data to the server? Assume that security is handled in a way that is transparent to the form design.  **GATE 2005** | AP | CO2 | 5 |
| **13.** | i) | Write XML schema for a Movie database table with the following structure :  Movie (name, director, date released, record), name (firstname, midname, laştname) date released (date, month. year). | AP | CO2 | 3 |
| ii) | Why should namespaces be used in XML? Write syntax to declare two types of XML namespaces. Explain with an example. |  |  | 3 |
| iii) | Write a java script program to explain how to add buttons, prompt and confirmation boxes. | AP | CO2 | 4 |
| **(OR)** | | | | | |
| **14.** | i) | A graphical HTML browser resident at a network client machine Q accesses a static HTML webpage from a HTTP server S. The static HTML page has exactly one static embedded image which is also at S. Assuming no caching, how many HTTP Request and TCP connection is needed about the HTML webpage loading (including the embedded image)? **GATE 2014** | U | CO1 | 5 |
| ii) | 1. Mention the action takes place in an interaction between a web browser and a web server. **GATE 2014** | U | CO2 | 5 |
| **15.** | i) | Create a XML document to store the personal details of an employee.  a. Include the following data:  Employee’s name, age, marital status, and details of children for married employees.  b. Create an XSLT document to display the names of married employees with their spouse name. | AN | CO2 | 5 |
| ii) | Differentiate DOM Parser and SAX Parser. Construct a DOM parser to parse an XML document containing employee details. | AN | CO2 | 5 |
| **(OR)** | | | | | |
| **16.** | i) | Write a DTD for following XML Specification **UGCNET 2015**  <!DOCTYPE library SYSTEM “library.dtd”>  <book>  <title>GATE 2005</title>  <type value=”BROCHURE”/>  <accno>23464576</accno>  </book>  <book>  <type value=”FICTION”/>  <accno>23464576</accno>  </book> | AP | CO2 | 5 |
| ii) | Consider the three commands:PROMPT, HEAD and RCPT and explain in which protocol these commands have correct association. | AP | CO2 | 5 |

**Note: BT – Bloom’s Taxonomy**

U – UnderstandingAN – Analysis AP – Application