****

**DEPARTMENT: COMPUTER SCIENCE AND ENGINEERING**

|  |  |  |  |
| --- | --- | --- | --- |
| *Internal Assessment* | **II** | *Academic Year/Semester* | **2023-24 / EVEN** |
| *Course Code and Name* | CST204 DATABASE MANAGEMENT SYSTEMS | *Branch* | **CSE** |
| *Date of Exam* | 29-04-2024 | *Duration* | **90 Min** |
| *Starting time* | 10.00 am | *Max. Marks* | **50** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PART-A (*Answer all questions, Each carries 5 marks*) Max Marks: 20** | | | | |
| ***Q.No*** |  | ***Marks*** | ***CO*** | ***Level*** |
| **1** | Differentiate between the WHERE and HAVING clause. Illustrate with an example. | **5** | CO3 | L2 |
| **2** | Differentiate the concept of trigger and assertion in SQL with an example | **5** | CO3 | L2 |
| **3** | A file has r =20000 STUDENT records of fixed length. Each record has the following fields: NAME (30 bytes), SSN (9 bytes), ADDRESS (40 bytes), PHONE(9 bytes), BIRTHDATE (8 bytes), GENDER (1 byte), DEPTID (4 bytes), CLASSCODE (4 bytes), and PROGID (3 bytes). An additional byte is used as a deletion marker. The file is stored on the disk with block size B=512 bytes,   1. Calculate the record size R in bytes. 2. Calculate the blocking factor bfr and the number of file blocks b assuming an unspanned organization. | **5** | CO4 | L3 |
| **4** | Differentiate 3NF and BCNF with example | **5** | CO3 | L2 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PART-B (*Each question carries 15 marks)* Max Marks: 30** | | | | | |
| **5** | a | Explain static hashing and dynamic hashing. | **6** | C04 | L1 |
| b | For the relation schema below, give an expression in SQL for each of the queries that follows:  employee (ID, person\_name, street, city)  works (ID, company\_name, salary)  company ( company\_name, city)  manages (ID, manager\_id)   1. Find the employees whose name starts with ‘C’ 2. Find the name of managers of each company 3. Find the ID, name, and city of residence of employees who works for “First Bank Corporation” and earns more than Rs50000 4. Find the name of companies whose employees earn a higher salary, on average, than the average salary at “First Bank Corporation” | **9** | CO3 | L3 |
| **OR** | | | | | |
| **6** | a | What is multi-level indexing? How does it improve the efficiency of searching an index file? | **6** | C04 | L1 |
| b | Consider the relation R = {A, B, C, D, E, F, G, H} and the set of functional dependencies F = {A→DE, B→F, AB→C, C→GH, G→H}. What is the key for R? Decompose R into 2NF and then 3NF relations. | **9** | CO3 | L3 |
|  | | | | | |
| **7** | a | Consider a relation schema R (A,B,C,D) with the following functional dependencies A → B, B → C, C → D, D → B. Determine whether the decomposition of R into R1 ( A , B ) , R2 ( B , C ) and R3 ( B , D ) is lossless or lossy. Write the complete steps. | **8** | CO3 | L3 |
| b | Explain the ACID properties of transactions. | **7** | CO5 | L1 |
| **OR** | | | | | |
| **8** | a | Define minimal cover. Let the given set of functional dependencies be: 𝐸:{𝐵 → 𝐴,𝐷 → 𝐴, 𝐴𝐵 → 𝐷} . Find the minimal cover of E | **8** | CO3 | L3 |
| b | What is a schedule? Define the concepts of serial, serializable, cascade less, and strict schedules. | **7** | CO5 | L1 |

|  |
| --- |
| **Course Outcomes (CO):** |
| **CO 3 :** Model and design solutions for efficiently representing and querying data using relational model |
| **CO 4 :** Demonstrate the features of indexing and hashing in database applications |
| **CO 5 : D**iscuss and compare the aspects of Concurrency Control and Recovery in Database systems |
| **Bloom’s Taxonomy Level:** |
| L1: Remember, L2: Understand, L3:Apply L4:Analyze |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Prepared By**  **(Course Instructor)** | **Verified By**  **(Stream Coordinator)** | **Approved By**  **(HOD/Academic Head)** |
| **Name & Signature** | Prof. Sreedevi R Krishnan | Prof. Raghi R Menon |  |

****

**INTERNAL EXAM QUALITY ASSESSMENT FORM**

|  |  |  |
| --- | --- | --- |
| 1 | CO’s assessed in the question paper |  |
| 2 | Blooms taxonomy levels assessed in the question paper |  |
| 3 | Syllabus/units for the test (Modules) |  |
| 4 | Level of question paper as assessed by the faculty: (Tick Appropriate level)  DIFFICULT MODERATELY DIFFICULT EASY | |
| 5 | Marking criteria/scheme of valuation is attached with the question paper. YES / NO | |

**CHECK –LIST**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Sl No.*** | ***Particulars*** | ***Yes/No*** | | ***Remarks*** |
| **Whether the question paper has the following titles correctly marked:** | | | | |
| 1 | Name of the subject and subject code |  |  | |
| 2 | Date and time of the exam |  |  | |
| 3 | Year and Semester |  |  | |
| 4 | Branch Name |  |  | |
| 5 | Duration of the exam |  |  | |
| **Whether the content of the question paper has the following correctly marked:**  **(Mark ‘NA’ if any of the title is not applicable for the question paper)** | | | | |
| 6 | Format of the question paper |  |  | |
| 7 | Page numbers have been provide in the footer |  |  | |
| 8 | Necessary and sufficient instructions have been provided at the beginning of the question paper |  |  | |
| 9 | Questions have numbered correctly |  |  | |
| 10 | Sub-questions have been numbered correctly |  |  | |
| 11 | Total marks assigned for sub questions tallies with mark allocated for the question |  |  | |
| 12 | Questions have been set for the max. marks |  |  | |
| 13 | Blooms taxonomy against each question have been set correctly taking into account the expected levels |  |  | |
| 14 | Figures are clear in the print-out |  |  | |
| 15 | COs and Knowledge level have been provided at the end of the question paper |  |  | |
| 16 | Grammatical errors have been checked |  |  | |

**CO ASSESSMENT**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CO Assessed** | **CO \_1\_\_\_\_\_** | **CO \_2\_\_\_\_\_** | **CO \_3\_\_\_\_\_** | **CO \_\_\_\_\_\_** | **CO \_\_\_\_\_\_** |
| **Marks** | 26 | 18 | 6 |  |  |
| **Weightage** |  |  |  |  |  |

|  |  |
| --- | --- |
| Name and dated signature of the faculty | Sreedevi R Krishnan |
| Name and dated signature of the Stream Coordinator with recommendation |  |
| Name and dated Signature of Academic Head |  |
| Name and dated Signature of Head of Department | Prof Manesh T |