**Institute of Information Technology and Management,**

**New Delhi-58.**

**Assignment No-1**

**Programme: BCA Semester: II Paper Code: BCA 108 Academic Year: 2021-22**

**Max. Marks:20**

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| --- | --- | --- | --- |
| **CO#** | **Detailed Statement of the CO** | **BT Level** | **Mapping to PO** # |
| CO1 | Understand the DBMS concepts with detailed architecture, characteristics. Describe different database languages and environment and learn various data models, along with the related terminologies | BTLI | POI, PO2, PO3, PO7 |
| CO2 | Explore Structure Query Language, a brief on NOSQL, Query By Example. Also understand the overview of SQL, and try to implement DDL, DML and DCL along with operators, use of joins, nested query, use of views and lndex  Discuss integrity Constraints | BTL3 | POl, PO2, PO3, PO7 |
| cm | Describe Relational Data Model, explain Codd's Rules, Relational Algebra, Set theory operations and the concept of functional dependencies and normalization | BTL4 | POI, PO2, PO3, PO4 |
| CO4 | Acquire Knowledge about Transaction Processing, concurrency problems, and its controlling techniques, Database backup and recovery and security. | BTL2 | PO2, PO3, PO4, PO7, PO8 |

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| **S. No.** | **Questions** | **Relevant Course Outcomes** |
|  | How is traditional file processing approach different than DBMS approach? Explain. | CO1 |
|  | Discuss different types of users of DBMS. | CO1 |
|  | Explain the three schema architecture of Data base Management System. | CO1 |
|  | Differentiate between Hierarchical, Network & Relational Database Management Systems. | CO1, CO2 |
|  | A company called M/s ABC Consultants Ltd. Has an entity EMPLOYEE with a number of employees having attributes such as EMP-ID, EMP-NAME, EMP-ADD and EMP-BDATE. The company has another entity PROJECT that has several projects having attributes such as PROJ-ID, PROJ-NAME and START-DATE. Each employee may be assigned to one or more projects or may not be assigned to one or more projects. A project must have at least one employee assigned and may have any number of employees assigned. An employee’s billing rate may vary by project, and the company wishes to record the applicable billing rate (BILL-RATE) for each employee when assigned to a particular project.  By making additional assumptions, if so required, draw an E-R diagram for the above situation. | CO5 |
|  | Differentiate between specialization and generalization with illustrative example. | CO1, CO5 |

**Last Date for Submission: 30-April-2022**

**Guidelines for submission**

* All assignments should be legibly handwritten.
* 1.5 line spacing should be used with text justified in word processor.
* Tables and figures should be named properly.
* For hand written assignments make sure pages are securely fastened, preferably with a staple in the top left-hand corner and placed in a folder.

**The following information should appear on the cover page of the assignment:**

* + Assignment No
  + Submitted to
  + Submitted by (Name & Enroll No)
  + Date of submission

**Assessment Criterion for Written Assignment**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Topic**  **(weight)** | **Unacceptable**  **(1)** | **Marginal**  **(2)** | **Acceptable**  **(3)** | **Exceptional**  **(4)** |
| **Knowledge of fundamental concept** | Minimal knowledge attained | Some knowledge attained | Moderate knowledge attained | Advance knowledge attained |
| **Enquiry Based Learning** | Mere observation | Devising questions based on their observations, | Developing hypotheses and formulating strategies for testing their theories, | Performing the tests,  Analyzing and drawing conclusions and  Communicating their findings to others |
| **Understanding/Critical Thinking of subject** | No understanding/Critical Thinking | General understanding/Critical Thinking | Moderate understanding/Critical Thinking/Reasoning/Logic | Advance understanding/Analytical Skills |
| **Application of theory** | Knowledge does not meet minimum requirements. | Little application of learned concepts and ability to solve problems | Strong, good, comprehensive knowledge and its application in solution of complex practical problems. | Excellent, outstanding, comprehensive knowledge and its application in solution of complex practical problems |
| **Total Points** | **0-5** | **6-10** | **11-15** | **16-20** |

\* **Changes are subjected with respect to the course requirements.**

**Note:** Student can earn 80 points in total across 4 parameters (20 each in Knowledge of fundamentals, Enquiry Based Learning, Understanding/ Critical Thinking and Appl. Of Theory) which will be divided by 4. For example, if a student earns 64 points then his assignment marks will be 64/4=16 out of 20.

**(Ashish Kumar Nayyar)**

**Institute of Information Technology and Management,**

**New Delhi-58.**

**Assignment No-2**

**Programme: BCA Semester: II Paper Code: BCA 108 Academic Year: 2021-22**

**Max. Marks:20**

|  |  |  |  |
| --- | --- | --- | --- |
| **CO#** | **Detailed Statement of the CO** | **BT Level** | **Mapping to PO** # |
| CO1 | Understand the DBMS concepts with detailed architecture, characteristics. Describe different database languages and environment and learn various data models, along with the related terminologies | BTLI | POI, PO2, PO3, PO7 |
| CO2 | Explore Structure Query Language, a brief on NOSQL, Query By Example. Also understand the overview of SQL, and try to implement DDL, DML and DCL along with operators, use of joins, nested query, use of views and lndex  Discuss integrity Constraints | BTL3 | POl, PO2, PO3, PO7 |
| CO3 | Describe Relational Data Model, explain Codd's Rules, Relational Algebra, Set theory operations and the concept of functional dependencies and normalization | BTL4 | POI, PO2, PO3, PO4 |
| CO4 | Acquire Knowledge about Transaction Processing, concurrency problems, and its controlling techniques, Database backup and recovery and security. | BTL2 | PO2, PO3, PO4, PO7, PO8 |

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| **S. No.** | **Questions** | **Relevant Course Outcomes** |
|  | Define super key, candidate key, alternate key, primary key and foreign key with example to illustrate. | CO1, CO3 |
|  | List out the six fundamental operators and 4 additional operators in relational algebra each with syntax and example. | CO2 |
|  | Write in detail about Cross Product, Joins and Natural Join | CO1, CO2 |
|  | Explain Inner and Outer joins with illustrative examples. | CO1, CO2 |
|  | Define formally the division operation in relational algebra with an example. | CO3 |

**Last Date for Submission: 15-May-2022**

**Guidelines for submission**

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**Assessment Criterion for Written Assignment**

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| **Topic**  **(weight)** | **Unacceptable**  **(1)** | **Marginal**  **(2)** | **Acceptable**  **(3)** | **Exceptional**  **(4)** |
| **Knowledge of fundamental concept** | Minimal knowledge attained | Some knowledge attained | Moderate knowledge attained | Advance knowledge attained |
| **Enquiry Based Learning** | Mere observation | Devising questions based on their observations, | Developing hypotheses and formulating strategies for testing their theories, | Performing the tests,  Analyzing and drawing conclusions and  Communicating their findings to others |
| **Understanding/Critical Thinking of subject** | No understanding/Critical Thinking | General understanding/Critical Thinking | Moderate understanding/Critical Thinking/Reasoning/Logic | Advance understanding/Analytical Skills |
| **Application of theory** | Knowledge does not meet minimum requirements. | Little application of learned concepts and ability to solve problems | Strong, good, comprehensive knowledge and its application in solution of complex practical problems. | Excellent, outstanding, comprehensive knowledge and its application in solution of complex practical problems |
| **Total Points** | **0-5** | **6-10** | **11-15** | **16-20** |

\* **Changes are subjected with respect to the course requirements.**

**Note:** Student can earn 80 points in total across 4 parameters (20 each in Knowledge of fundamentals, Enquiry Based Learning, Understanding/ Critical Thinking and Appl. Of Theory) which will be divided by 4. For example, if a student earns 64 points then his assignment marks will be 64/4=16 out of 20.

**(Ashish Kumar Nayyar)**

**Institute of Information Technology and Management,**

**New Delhi-58.**

**Assignment No-3**

**Programme: BCA Semester: II Paper Code: BCA 108 Academic Year: 2021-22**

**Max. Marks:20**

|  |  |  |  |
| --- | --- | --- | --- |
| **CO#** | **Detailed Statement of the CO** | **BT Level** | **Mapping to PO** # |
| CO1 | Understand the DBMS concepts with detailed architecture, characteristics. Describe different database languages and environment and learn various data models, along with the related terminologies | BTLI | POI, PO2, PO3, PO7 |
| CO2 | Explore Structure Query Language, a brief on NOSQL, Query By Example. Also understand the overview of SQL, and try to implement DDL, DML and DCL along with operators, use of joins, nested query, use of views and lndex  Discuss integrity Constraints | BTL3 | POl, PO2, PO3, PO7 |
| CO3 | Describe Relational Data Model, explain Codd's Rules, Relational Algebra, Set theory operations and the concept of functional dependencies and normalization | BTL4 | POI, PO2, PO3, PO4 |
| CO4 | Acquire Knowledge about Transaction Processing, concurrency problems, and its controlling techniques, Database backup and recovery and security. | BTL2 | PO2, PO3, PO4, PO7, PO8 |

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| **S. No.** | **Questions** | **Relevant Course Outcomes** |
|  | Write in brief about select, project, rename operation in Relational Algebra | CO1 |
|  | Write in brief about Tuple Relational Calculus and Domain Relational Calculus | CO1, CO3 |
|  | Explain internal memory structure of Oracle. | CO2 |
|  | Discuss Exception handling in PL/SQL | CO1, CO2 |
|  | How is stored procedure created? Explain with example the three ways of passing Parameters with the stored procedure | CO1, CO2 |
|  | Consider the following schema:  **Suppliers**(sid: integer, sname: string, address: string)  **Parts**(pid: integer, pname: string, color: string)  **Catalog**(sid: integer, pid: integer, cost: real)  Using SQL answer the following queries:   1. Find the sids of suppliers who supply some red part or are at 221 Packer Street. 2. Find pairs of sids such that the supplier with the first sid charges more for some part than the supplier with the second sid. 3. Find the pids of parts supplied by at least two different suppliers. 4. Find the pids of the most expensive parts supplied by suppliers named Yosemite Sham. 5. Find the pids of parts supplied by every supplier at less than $200 | CO2, CO3 |

**Last Date for Submission:-31-May-2022**

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**Assessment Criterion for Written Assignment**

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| **Enquiry Based Learning** | Mere observation | Devising questions based on their observations, | Developing hypotheses and formulating strategies for testing their theories, | Performing the tests,  Analyzing and drawing conclusions and  Communicating their findings to others |
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**(Ashish Kumar Nayyar)**

**Institute of Information Technology and Management,**

**New Delhi-58.**

**Assignment No-4**

**Programme: BCA Semester: II Paper Code: BCA 108 Academic Year: 2021-22**

**Max. Marks:20**

|  |  |  |  |
| --- | --- | --- | --- |
| **CO#** | **Detailed Statement of the CO** | **BT Level** | **Mapping to PO** # |
| CO1 | Understand the DBMS concepts with detailed architecture, characteristics. Describe different database languages and environment and learn various data models, along with the related terminologies | BTLI | POI, PO2, PO3, PO7 |
| CO2 | Explore Structure Query Language, a brief on NOSQL, Query By Example. Also understand the overview of SQL, and try to implement DDL, DML and DCL along with operators, use of joins, nested query, use of views and lndex  Discuss integrity Constraints | BTL3 | POl, PO2, PO3, PO7 |
| cm | Describe Relational Data Model, explain Codd's Rules, Relational Algebra, Set theory operations and the concept of functional dependencies and normalization | BTL4 | POI, PO2, PO3, PO4 |
| CO4 | Acquire Knowledge about Transaction Processing, concurrency problems, and its controlling techniques, Database backup and recovery and security. | BTL2 | PO2, PO3, PO4, PO7, PO8 |

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| **S. No.** | **Questions** | **Relevant Course Outcomes** |
|  | Consider the following relation    Which of the following functional dependencies may hold in the above relation: A→B, B→C, C→B  Justify your answer | CO1 |
|  | Discuss the purpose of normalization & normalization process. Explain 1NF, 2NF, 3NF and BCNF with examples. | CO1, CO3 |
|  | Write short notes on:   * + 1. Deffered update vs immediate update     2. Lost update problem     3. Concept of dirty bit and pin unpin bits     4. Shadow Paging | CO1, CO2 |
|  | Discuss the concurrency control techniques in details. | CO2, CO3 |
|  | Explain Timestamp Ordering protocol and Thomas Write rule |  |
|  | Explain the two phase locking protocol. What are its advantages and disadvantages | CO1, CO3 |

**Last Date for Submission:-15-Jun-2022**

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