

## FACULTY OF INFORMATICS

B.E. 3/4 (IT) I-Semester (Supplementary) Examination, June/July 2011

## DATABASE SYSTEMS

Time : Three Hours]

[Maximum Marks : 75

*Note :—Answer ALL questions from Part—A. Answer any FIVE questions from Part—B.*

## PART—A (Marks : 25)

- |   |   |
|---|---|
| 1. Define a Database System.                                    | 2 |
| 2. List different types of attributes with examples.            | 3 |
| 3. What is a join operation and list different types of joins ? | 3 |
| 4. How are Null values dealt in Relational Algebra ?            | 3 |
| 5. Give two examples of Integrity Constraints.                  | 2 |
| 6. Distinguish between 3NF and BCNF.                            | 3 |
| 7. State the purpose of Indexing.                               | 3 |
| 8. Specify ACID properties.                                     | 2 |
| 9. Define a Time Stamp.   | 2 |
| 10. Differentiate between Nonvolatile and Stable Storage.       | 2 |

## PART—B (Marks : 50)

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|--|---|
| 11. (a) Discuss applications of Databases.   |   |
| (b) Draw the UML class diagrams for Entity sets and attributes, Relationships, Cardinality constraints, Generalization and Specialization. |   |
| 12. By giving examples in both Relational algebra and SQL notation, explain fundamental Relational Algebra Operations.                     |   |
| 13. Explain about Embedded and Dynamic SQL.  |   |
| 14. (a) Draw the structure of a B <sup>+</sup> -Tree.  | 3 |
| (b) Write the steps involved in Querying and Updating B <sup>+</sup> -trees.   | 7 |
| 15. Write about Time stamp-Based protocols.  |   |
| 16. Discuss Extended E-R features.   |   |
| 17. Write about :  |   |
| (a) Normal forms   |   |
| (b) Implementing Atomicity and Durability in Databases.  |   |