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M.C.A. DEGREE EXAMINATION, AUGUST/SEPTEMBER 2008.

Second Semester

DMC 1654 — DATABASE MANAGEMENT SYSTEMS

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   Define Logical data independence.

2.   With an example explain a weak entity.

3.   With an example explain a Primary Key.

4.   With an example explain referential integrity.

5.   Justify the need for Indexing.

6.   What is hashing?

7.   Discuss the need for Query processing.

8.   What is the importance of Join operation in evaluation of an expression and query optimization?

9.   With an example explain a Read Only Transaction.

10.   Why recovery? Discuss.

11. (a) (i) With an example discuss the Relational Data Model. (10)

    (ii) Diagrammatically illustrate and discuss the three schema architecture of a DBMS. (6)

Or

(b) A company is organized in two Departments. Each Department has Employees working in it. Each Department controls a number of Projects. An Employee can work in two (or) more projects on a day. However an employee is not permitter to work more than once on a project he/she has worked on a day. (For example if an employee has worked on project pool on 10/07/08 he/she will not be permitted to work again on the project pool on 10/07/08). The date an employee worked, In time and out time has to be kept track.

    (i) Assume appropriate attributes and develop an ER model. (8)

    (ii) Transform the ER model you have developed to Relational data model. (8)

12. (a) (i) Explain generalization and specialization in an ER diagram. Explain it with a relevant example. (6)

    (ii) With relevant examples discuss the various operations in Relational Algebra.

Or

(b) With relevant examples discuss First Normal Form, Second Normal Form, Third Normal Form and BCNF. (16)

13. (a) Explain the different storage method of file organization in detail with suitable example. (16)

Or

(b) (i) Discuss the concept of hashing in file organization in detail with suitable example. (10)

    (ii) Discuss B tree indexing with the help of an example. (6)

14. (a) Diagrammatically illustrate and discuss the steps in query processing.

Or

(b) Discuss the following :

    (i) Materialization. (4)

    (ii) Pipelining. (4)

    (iii) Heuristic optimization. (8)

15. (a) What is lock based concurrency control? Explain any two locking protocol in detail. Also discuss deadlock with an example. (16)

Or

(b) Describe in detail the shadow paging technique adopted in crash recovery system. (16)

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