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CSE201 Enrol. No. .....

[ET]

END SEMESTER EXAMINATION : APRIL – MAY, 2018

DATABASE MANAGEMENT SYSTEMS

Time : 3 Hrs. *Maximum Marks : 70*

Note: ***Attempt questions from all sections as directed.***

SECTION – A (30 Marks)

Attempt any **five** *questions out of* **six.**

Each question carries **06** *marks.*

1. What do you understand by a relationship and explain differences between a relationship type, a relationship instance and a relationship set?

2. Describe the basic features of Hierarchal data model and Discuss their advantages, disadvantages and importance to the end user and the designer.

3. What do you mean by Functional Dependency and Full Functional Dependency with Example and why certain functional dependencies called trivial functional dependencies?

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4. If a deadlock is avoided by a deadlock avoidance schemes, is starvation still possible? Explain your answer.

5. Explain how heuristic query optimization is performed with an example.

6. Explain the term :

   (a) Multimedia database (3)

   (b) Pipelining and materialization (3)

SECTION – B (20 Marks)

Attempt any **two** *questions out of* **three.**
Each question carries **10** *marks.*

7. Most implementation of database systems use strict two phase locking. Suggest 3 reasons for the popularity of this protocol.

8. Explain the query decomposition and its objectives. Elaborate the phases of query decomposition with a neat diagram.

9. An employee relation have e_name, salary, e_id, dept_name and project relation have dept_name and project_no. Write relational algebra and tuple relational calculus of given queries :

(a) Retrieve the emp_name and salary of all employees who work in IT dept.

(b) Select tuples of all employees who either work in IT department and get annual salary more than 20000, or work in HR department and get annual salary more than 15000.

SECTION – C (20 Marks)

(Compulsory)

10. (a) Consider a university database for the scheduling of classrooms for - final exams. This database could be modeled as the single entity set exam, with attributes course-name, section-number, room-number, and time. Alternatively, one or more additional entity sets could be defined, along with relationship sets to replace some of the attributes of the exam entity set, as

- course with attributes name, department, and c-number
- section with attributes s-number and enrollment, and dependent as a weak entity set on course
- room with attributes r-number, capacity, and building

Show an E-R diagram illustrating the use of all three additional entity sets listed. (10)

(b) Explain normalization and different normal forms. Differentiate between 4-NF and multivalued dependency. (10)