

Exam.Code:0915

Sub. Code: 6777

1129

B.E. (Computer Science and Engineering)

Third Semester

CS-302: Database Systems

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Answer the following:-

- a) Define Physical Data Independence.
- b) Define Specialization.
- c) Define Atomicity in Transaction processing?
- d) What do you mean by Foreign Key?
- e) What is the role of checkpoints in Data Recovery?
- f) What is Shadow paging?
- g) What is a Trigger, What are its three parts?
- h) Define Transitive Dependency.
- i) Define Aggregation.
- j) Define Domain Key Normal form.

(10x1)

UNIT – I

- II. a) List five significant differences between a file processing system and a DBMS?
b) Explain the difference between external conceptual and internal schemas. How are these different schema layers related to concepts of physical and logical data independence? (2x5)
- III. a) Define Hashing. Discuss various hashing techniques.
b) What is the difference between Clustered, Dense and a Sparse index? (2x5)
- IV. a) What is an ER diagram? Construct an ER diagram for a University database System.
b) Consider the Relational database where the Primary keys are underlined. Give an expression in Relational algebra to express each of following queries:
employee (personname, street ,city)
works (personname, companyname, salary)
company (companyname, city)
manages (personname, managername)

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(7)

- i) Find the names of all employees who live in the same city and on the same street as do their managers.
- ii) Find the names of all who do not work for small Bank Corporation.
- iii) Find the names of all employees in this database who live in the same city as the company for which they work. (4,6)

UNIT – II

- V. a) Define the term Functional dependency. Why some functional dependencies are called trivial? Explain taking suitable examples.
- b) What is Fourth Normal form? Explain why 4NF is more desirable than BCNF? (2x5)
- VI. a) What is Concurrency Control? What are its objectives? Discuss Lost Update problem in Concurrency control taking suitable example.
- b) Under what conditions is it less expensive to avoid deadlock than to allow deadlocks to occur and then to detect them. (2x5)
- VII. a) Differentiate between Immediate Update and Deferred Update recovery techniques.
- b) Write short note on following:-
 - i) Discretionary access control
 - Digital Signatures (2x5)

x-x-x