

Total No. of Questions :12]

SEAT No. :

[Total No. of Pages :4

P1663

[5058] - 151

T.E. (Computer)

DATABASE MANAGEMENT SYSTEMS

(2008 Pattern) (Semester - I) (310241)

Time : 3 Hours]

[Max. Marks :100

Instructions to the candidates:

- 1) Neat diagrams must be drawn wherever necessary.*
- 2) Figures to the right side indicate full marks.*
- 3) Assume suitable data, if necessary.*
- 4) Answers to the two sections should be written in separate answer books.*
- 5) Answer any three questions from each section.*

SECTION - I

- Q1)** a) Explain database languages. **[4]**
- b) Explain the difference between the two-tier and three-tier client server architecture. **[4]**
- c) With the help of neat diagram, explain database system structure and describe its various components. **[10]**

OR

- Q2)** a) Explain significant difference between File Processing and DBMS. **[8]**
- b) Explain in detail the different levels of abstraction. **[4]**
- c) What is difference between specialization and generalization? **[6]**
- Q3)** a) Write short note on Dynamic and Embedded SQL. **[8]**
- b) Explain the need for following: **[4]**
- i) View
- ii) Foreign key

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- c) Consider following database: [4]

Student (Roll_no, Name, Address)

Subject (Sub_code, Sub_name)

Marks (Roll_no, Sub_code, marks)

Write following queries in SQL:

- i) Find average marks of each student, along with the name of student.
- ii) Find how many students have failed in the subject “DBMS”.

OR

- Q4)** a) Write short note on Stored procedures and triggers. [6]

- b) Explain insert, update and delete operations with respect to views. [4]

- c) Consider the relational database [6]

dept (dept_no, dname, loc, mgrcode)

emp (emp_no, ename, designation)

project (proj_no, proj_name, status)

dept. and emp. are related as 1 to many.

Project and emp are related as 1 to many.

Write queries for the following:

- i) Give the names of employees who are working on ‘Blood Bank’ project.
- ii) Give the name of managers from ‘MARKETING’ department.
- iii) Give all the employees working under status ‘INCOMPLETE’ projects.

Q5) a) Specify Armstrong's axioms. Use Armstrong's axioms to prove the soundness of decomposition rule. [8]

b) Explain why 4NF is more desirable than BCNF. Rewrite the definition of 4NF and BCNF using the notions of domain constraints. [8]

OR

Q6) a) Describe the concept of transitive dependency and explain how this concept is used to define 3NF. [8]

b) Write short note on Normalization. [8]

SECTION - II

Q7) a) Explain in detail, the use of B-tree as an indexing technique. Compare B tree and B⁺ (B plus) tree. [8]

b) Explain equivalence rules for query optimization. [8]

OR

Q8) a) What are the steps involved in query processing? Explain each in brief. [10]

b) Define and explain [6]

i) Dense index

ii) Multilevel index

Q9) a) Explain the concept of transaction. Describe ACID properties for transaction. [8]

b) When do deadlock happen? How to prevent them and how to recover if deadlock takes place. [8]

OR

Q10) a) Explain shadow paging recovery scheme. [8]

b) Explain two phase locking protocol. How does it insure serializability? [8]

- Q11)**a) What is data mining? Why it is required? Explain with example. [6]
- b) Explain different pointer swizzling techniques. [8]
- c) Explain: Object identity and pointers. [4]

OR

- Q12)**a) Write a short note on any two: [12]
- i) Data ware house
- ii) Need of backup and replication.
- iii) Persistent programming language
- b) Explain advantages and disadvantages of Distributed Database Systems. [6]

