

Total No. of Questions : 12]

SEAT No. :

P2943

[4958]-181

[Total No. of Pages : 4

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.*

- Q1)** a) Explain DBMS structure in detail. [8]
- b) Explain different levels of abstraction. [6]
- c) What is meant by mapping cardinality? [2]

OR

- Q2)** a) Explain following advantages of DBMS over file system: [8]
- i) Data redundancy and isolation
 - ii) Data integrity
 - iii) Data isolation
 - iv) Concurrency
- b) Explain the different constraints on specialisation & generalization with suitable example. [4]
- c) Explain the concept of weak entity set with example. [4]

P.T.O.

Q3) a) Consider following relational database **[8]**

Employee (emp_name, street, city)

Works (emp_name, company_name, salary)

Company (company_name, city)

Manages (emp_name, manager_name)

For each of the given query, give an expression in relational algebra.

- i) Find employee name, street and city of residence whose salary exist in between 30000 & 40000 and work in XYZ Ltd.
 - ii) Find names, cities of residence and salary of all managers.
- b) Explain DDL and DML with different commands/statements used in SQL. **[8]**

OR

Q4) a) Write a short note on dynamic and embedded SQL. **[8]**

- b) What is cursor? Explain explicit and reference cursor with example. How cursor is implemented using embedded SQL? **[8]**

Q5) a) Describe the concept of transitive dependency and explain how this concept is used to define 3 NF. **[6]**

- b) Compute the closure of the following set F of functional dependencies for relational schema, R = (A, B, C, D, E) **[6]**

$A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A$

List the candidate keys for R.

- c) Prove the soundness of pseudo transitive dependency. **[6]**

OR

- Q6)** a) Define and explain 1NF, 2NF and 3NF with examples. [8]
- b) Explain different anomalies that exist in databases. [6]
- c) Is a schema in 3NF always in 2NF? Elaborate. [4]

SECTION - II

- Q7)** a) Explain in detail use of B-Tree as an indexing technique compare B - Tree and B+ Tree. [8]
- b) What is ordered indices? Explain the types of ordered indices with suitable example. [8]

OR

- Q8)** a) What are the steps involved in query processing. Explain each in brief with diagram. [8]
- b) What are the advantages and disadvantages of hash indices relative to B tree indices? How might the type of index influence the query processing? [8]
- Q9)** a) Explain the concept of transaction. Describe ACID properties for transaction. [8]
- b) Explain shadow paging recovery scheme and log based recovery scheme. [10]

OR

- Q10)**a) Explain recoverable and cascade less schedules. [8]
- b) Explain two phase locking protocol. How does it ensures serializability? [10]

Q11)a) Specify advantages and disadvantages of distributed database system. **[8]**

b) Write short note on any two **[8]**

i) Data warehouse

ii) Pointer swizzling techniques

iii) Data mining

OR

Q12)a) What is the difference between persistent and transient objects? How is persistence objects are handled in the typical OODatabase system? **[8]**

b) Explain 2-tier and 3-tier architecture. **[4]**

c) Explain steps in data mining. **[4]**

