

Total No. of Questions :12]

SEAT No. :

P1673

[Total No. of Pages :3

[5058] - 161

T.E. (IT)

DATABASE MANAGEMENT SYSTEMS

(2008 Course) (Semester - I)

Time : 3 Hours]

[Max. Marks :100

Instructions to the candidates:

- 1) *Answers Question 1 or 2, 3 or 4 and 5 or 6 from Section I and Question 7 or 8, 9 or 10 and 11 or 12 from Section II.*
- 2) *Answers to the two sections should be written in separate answer - books.*
- 3) *Neat diagrams must be drawn whenever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data, if necessary.*

SECTION - I

- Q1)** a) Specify codd's norms to be satisfied by RDBMS? [6]
- b) Explain the role of Database Administrator. [6]
- c) Explain the advantages of using an enterprise database. [6]

OR

- Q2)** a) Explain specialization, generalization and aggregation with example. [8]
- b) Consider the following database: [4]

faculty (name, address, city)

works (name, class_name, city)

class (class_name, city)

Manager (name, manager_name)

Draw an ER diagram for above database.

- c) What is layered architecture of DBMS system? How does it achieve logical, physical independence? [6]

P.T.O.

Q3) Consider the following relations: **[8]**

Person (Id-no, name, street, city, Bloodgr, Rh)

Donated (Id-no, donate-date)

Write SQL statements for each of the following:

- a) Get names & address of persons with blood group B Rh -ve who have donated blood more than once.
- b) Get number of persons with blood group AB Rh + ve.
- c) Explain with example the concept of trigger and assertion. **[8]**

OR

Q4) a) Explain the Natural Join operation & Division operation in relational algebra with example. **[8]**

b) Explain views with suitable example. **[8]**

Q5) a) List advantages & disadvantages of each of the following strategies. **[8]**

- i) Store each relation in one file
- ii) Store multiple relations in one file.

b) Compare Normalization & Denormalization. **[8]**

OR

Q6) a) Define minimal cover. Write an algorithm to obtain minimal cover. **[8]**

b) State and prove Armstrong's axioms for functional dependencies. **[8]**

SECTION - II

Q7) a) Explain the cost estimates of the following selection algorithms with appropriate example: **[10]**

- i) Linear search.
- ii) Primary B⁺ tree index equality on key.

b) Explain pipelining & its benefits with suitable example. **[8]**

OR

- Q8)** a) Construct a B⁺ tree for the following set of key values (2, 3, 5, 11, 17, 19, 23, 29, 31). Assume order to be 4. [8]
- b) Explain the techniques for improving speed of access blocks. [6]
- c) Explain Query Optimization. [4]

- Q9)** a) Explain deadlock prevention & recovery techniques. [8]
- b) Explain shadow paging with diagram. [8]

OR

- Q10)**a) State & explain Thomas write Rule with suitable example. [8]
- b) Define transaction. State & explain ACID properties. [8]

- Q11)**a) Explain how a persistent pointer is implemented? Compare this implementation with that of pointers as they exist in general purpose language such as C. [8]
- b) Explain 2 and 3 tier architecture of databases. [8]

OR

Q12) Write short notes on (any 4): [16]

- a) Centralized & client server architecture.
- b) Data warehouse.
- c) Need of Back up & replication.
- d) Data fragmentation techniques.
- e) OODBMS.

