GANPAT UNIVERSITY
B. Tech. Semester - III (Computer Engineering/Information Technology)
Regular Examination December - 2013
2CE306/2IT306: Database Management System- I

Time: 3 Hours]

[Total Marks: 70

Instructions:

1. Figures to the right indicate full marks.
2. Attempt each section in a separate answer book.
3. Be precise and to the point in your answer.

SECTION-I

Que-1	[A]	Explain following relational Algebra operations with example. 1. Rename operation 2. Union operation.	[6]
	[B]	Discuss Aggregate functions and Grouping in Relational Algebra.	[6]

OR

Que-1	[A]	Discuss Insert and Delete operation in Relational Algebra with example.	[6]
	[B]	Explain Physical Characteristics of Magnetic Disk.	[6]

Que-2	[A]	Define following with example also give E - R representation of each. Weak entity set, Partial key, Component attributes, Derived attribute, Specialization, Total Participation.	[6]
	[B]	Explain GENERALIZATION with example.	[5]

OR

Que-2	[A]	Explain reduction of following E-R Representation in to Relational schema. 1) Relationship set with descriptive attribute. 2). Specialization.	[6]
	[B]	What is Scalar Function in SQL? Explain any four scalar functions with example.	[5]

Que-3	[A]	Draw E- R representation for given entity sets Customer : { **Cust_no**, Cust_name{Cust_firstname,Cust_lastname}, Cust_address, Cust_no} Loan: {**loan_no, Cust_no**, loan_date, loan_amt} Payment: { Payment_no, Payment_date, Payment_amt} [Payment is weak entity set and Payment _no is partial key]. [Note: Bold Font indicate primary key attribute]	[8]
	[B]	Explain Natural- Join operation with example.	[4]

Page 1 of 2

Section – II

Que– 4 **[A]** List and explain any four real time applications which you have used, that most likely used database system to store static or dynamic data. 4

[B] Explain database languages. 4

[C] Explain the three levels of data abstraction. 4

OR

Que– 4 **[A]** Discuss various buffer replacement policies. 6

[B] Explain Data dictionary storage in detail. 6

Que– 5 **[A]** Explain trivial and non-trivial Functional Dependency in detail. 5

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

$$F = \{A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A\}$$

OR

Que– 5 **[A]** Describe lossy decomposition with example. 6

[B] Use the definition of Functional Dependency to argue that each of armstrong's axioms (reflexivity, augmentation and transitivity) is sound. 5

Que– 6 **[A]** We have following relations: 12

BOOKS(Doc_Id, Title, Publisher, Year)

STUDENTS(Stu_Id, Stu_Name, Dept_name, Age)

AUTHORS(AName, Address)

borrows(Doc_Id, Stu_Id, Date)

has-written(Doc_Id, AName)

describes(Doc_Id, Keyword)

Answer the following queries in **SQL**. (any six)

1. List all books published by McGraw-Hill before 1990.

2. List the name of those authors who are living in Ahmedabad.

3. List the name of students who are older than 30 and who are not studying EC.

4. List the title of books written by the author 'Silberschatz'.

5. Find the name of the youngest student.

6. List the authors of the books the student 'Smith' has borrowed.

7. Find the name of author who has written maximum number of books.

END OF PAPER