Database Management System Previous Year Question Paper from June 2014 to May 22

Data Base Management COMP
Systems – S.E Sem-IV (CBGS) June 2014

QP Code :NP-19797

(3 Hours) **[Total Marks : 80**

N.B. : (1) Question No. **1** is **compulsory.**
(2) Solve any **three** questions from the **remaining** questions.
(3) Make **suitable** assumptions if **needed.**

1. (a) List four significant differences between file processing system and database management system. **5**
   (b) Explain shadow page recovery. **5**
   (c) Explain the terms . total participation' and . partial participation' with example. **5**
   (d) Explain lossless join decomposition and dependency preserving decomposition. **5**

2. (a) Explain conflict serializability and view serializability with examples. **10**
   (b) Construct an ER diagram and relational model for hospital with a set of patients and a set of medical doctors. Patients are treated in a single ward by the doctors assigned to them. Each patient will be treated by a single doctor. Healthcare assistants also attend to the patients, a number of these are associated with each ward. Patient undergoes various tests. Accounts department manages patient treatment bill and staff payment. Some staff are paid part time and doctors and care assistants work varying amounts of overtime at varying rates (subject to grade). **10**

3. (a) What is an attribute ? Explain different types of attributes with examples. **10**
   (b) Write SQL queries for the given database. **10**
   Sailor(sid, sname,rating,age)
   Boat(bid, bname, color)
   Reserves(sid, bid,date)
   (i) Find the names of sailors who have reserved 'red' boat.
   (ii) Find the sailor (name) with highest rating.
   (iii) Find the average age of sailor.
   (iv) Find the age of youngest sailor for each rating level.
   (v) Add the new boat to the database. Assume any values for required attributes.

4. (a) Explain the term super key, primary key, candidate key and foreign key giving suitable examples. **10**
   (b) What is normalization ? Explain 1NF, 2 NF, 3NF, BCNF with suitable examples. **10**

5. (a) Explain domain constraints and referential integrity constraints. **10**
   (b) Explain sort-merge join algorithm in query processing. **10**

6. (a) Explain following relational algebra operations with examples :— **10**
   (i) set intersection. (iii) Natural Join
   (ii) Generalized projection (iv) Division operator
   (b) Describe the overall architecture of DBMS with suitable diagram **10**

———S———

S.E. Comp Sem II (CBSGS) 9/4/16
Database Mgmt Systems

QP Code :12512

(3 Hours) **[Total Marks : 100**

N.B. (1) Question No. **1** is **compulsory.**
(2) Solve any **three** questions out of the remaining questions.
(3) Make **suitable** assumptions if **needed.**

1. (a) Define Specialization and Generalization with an example. **5**
   (b) Write about Aggregate Functions in SQL. **5**
   (c) Discuss Referential Integrity Constraints. **5**
   (d) Explain Total Participation and Partial Participation with example. **5**

2. (a) Explain the following Relational Algebra Operations with example :— **10**
   (i) Set Intersection (iii) Generalized Projection
   (ii) Division Operator (iv) Natural join
   (b) Draw an ER Diagram for a banking enterprise. Convert it into relational model. **10**

3. (a) What is Normalization ? Explain INF, 2NF, 3NF and BCNF giving examples. **10**
   (b) What is an attribute ? Discuss various types of attributes with examples. **10**

4. (a) Explain sort-merge join algorithm in query processing. **10**
   (b) Describe conflict serializability and view serializability with examples. **10**

5. (a) Explain database system architecture in detail. **10**
   (b) What do you mean by Data Modeling ? Discuss different types of Models. **10**

6. Write Short notes on :— **20**
   (a) ACID Properties
   (b) Steps in Query Processing
   (c) Data Control Commands in SQL
   (d) Security in Database.

S.E. sem. IV - CBSS CMPN
Database Management Systems - 02/06/2015

Q.P. Code : 3549

(3 Hours) **[Total Marks : 80**

N.B. : (1) Question **No.1** is **compulsory.**
(2) Attempt **Any Three** from remaining **Five Questions.**

1. (a) Draw E-R diagram for online Ticket Railway Reservation System. Convert E-R diagram into tables. **10**

   (b) Explain following Relational algebra operations with examples. **10**
   (i) Set difference (ii) Generalized Projection
   (iii) Natural join (iv) Rename

2. (a) What is recoverable schedule? Why recoverability of schedule is desirable? Explain recovery with concurrent transaction. **10**

   (b) Explain following terms with suitable example **10**
   (i) Primary key (ii) Candidate key (iii) Foreign key (iv) Super key

3. (a) What is transaction? Discuss ACID properties of transaction? **10**

   (b) Define Normalization? Explain 1NF, 2NF, 3NF and BCNF **10**

4. (a) For the following given database, write SQL queries:- **10**
   Person (driver_id#, name, address)
   Car (license, model, year)
   Accident (reporcno, date, location)
   Owns (driver_id#, license)
   Participated (drivercid, car, report_number, damage_amount)

   (i) Find the total number of people who owned cars that were involved in accident 2004
   (ii) Find the number of accidents in which the cars belonging to "HT" were involved
   (iii) Update the damage amount for car with license number "Mum2011" in the accident with report number "AR120" to Rs. 4000

   (b) Describe overall architecture of DBMS with diagram. **10**

5. (a) Explain various types of constraints with an example. **10**

   (b) Explain sort-merge join algorithm in query processing. **10**

6. (a) Write short notes on any four **20**
   (i) Generalization and Aggregation
   (ii) Total Participation and Partial participation
   (iii) Division Operator
   (iv) Shadow page recovery
   (v) Cost Based query optimization

****

S.E Compute. (IV) (CBGS). 10/12/15

DBMS

QP Code : 5443

(3 hours) **Total Marks: 80**

N.B. : (1) Question number one is compulsory
(2) Attempt any three from remaining five questions
(3) Make suitable assumptions if needed

Q 1 (a) Draw E-R diagram for Hospital management System.

Convert E-R diagram into tables. 10

(b) Explain authorization in sql. 5

(c) List four significant differences between file processing system and database management system 5

Q. 2 (a) What is a deadlock? How is it detected? Discuss different types of deadlock prevention scheme. 10

(b) Explain following terms with suitable example 10

(I) Weak entity set (ii) Data manipulation language

(iii) Foreign key (iv) Super key

Q. 3 (a) When a transaction is rolled back under timestamp ordering, it is assigned a new timestamp, Why can it not simply keep its old timestamp? 10

(b) What is normalization? Explain 1NF, 2NF, 3NF and BCNF with examples 10

TURN OVER ...

SE - Sem IV (CBGS) - Computers 31/05/16
Database Management System

Q.P. Code : 541600

(3 Hours) **Total Marks: 80**

N.B.: (1) Question No.**1** is **compulsory**.
(2) Solve any **three** questions out of the remaining questions.
(3) Make **suitable** assumptions if **needed**.

1. (a) Explain BCNF with example. **5**
(b) Write short note on Deadlocks. **5**
(c) Explain Total and Partial Participation. **5**
(d) Discuss the role of Database Administrator. **5**

2. (a) Discuss steps in query processing. Also describe cost based query optimization. **10**
(b) Draw an ER Diagram and convert it into relational model for a Company, **10**
which has several Employees working on different types of Projects. Several Employees are working for one Department, every Department has a Manager. Several Employees are supervised by one Employee

3. (a) Explain types of integrity constraints with example. **10**
(b) Discuss Data Definition and Manipulation Commands in SQL. **10**

4. (a) Describe the overall architecture of DBMS with suitable diagram. **10**
(b) Explain Security and Authorization in DBMS. **10**

5. (a) Explain the following Relational Algebra Operations with example: **10**
i. Natural Join iii. Generalized Projection
ii. Set Intersection iv. Division Operator

(b) Explain Assertions and Triggers in detail. **10**

6. Write Short notes on: **20**
(a) ACID properties
(b) Shadow Paging
(c) Specialization and Generalization
(d) Aggregate Functions in SQL

COMP/IV/CBGS/DBMS / 15-12-16

Database management systems **Q.P. Code : 541603**

(3 Hours) **Total Marks: 80**

N.B.: (1) Question No.**1** is **compulsory**.
(2) Solve any **three** questions out of the remaining questions.
(3) Make **suitable** assumptions if **needed**.

1. (a) Give the advantages of DBMS over File Processing Systems. 5
(b) What are the steps involved in Query Processing. 5
(c) Explain Shadow Paging in brief. 5
(d) Define Super Key and Candidate Key with an example. 5

2. (a) Discuss conflict serializability and view serializability with examples. 10
(b) Describe the overall architecture of DBMS with suitable diagram. 10

3. (a) Explain the following Relational Algebra Operations with example: 10
i. Natural Join iii. Project
ii. Union iv. Select
(b) Explain types of integrity constraints with example. 10

4. (a) What is Normalization? Explain 1NF, 2NF, 3NF and BCNF giving examples. 10
(b) Consider the following database schema: 10

Employee(employee_name, street, city, date_of_join)
Works(employee_name ,company_name, salary)
Company(company_name, city)
Manages(employee_name, manager_name)
Solve the following queries using SQL:
i. Give all employee of ABC Company a 25% rise.
ii. Find all employees who live in the same cities and on the same street as their manager.
iii. Find all employees who join in the month of April.
iv. Delete the Smith belonging to XYZ Company.

5. (a) What is an attribute? Discuss various types of attributes with examples. 10
(b) Explain Security and Authorization in DBMS. 10

6. Write Short notes on: 20
(a) Total and Partial Participation
(b) Data Independence
(c) ACID Properties
(d) Aggregate Functions in SQL

Q. P. Code: 18323

Time: 3 Hours Marks: 80

N.B. : (1) Question Number 1 is compulsory

(2) Solve any three question from the remaining questions

(3) Make suitable assumptions if needed

1. (a) Construct an ER diagram for a hospital with a set of patients and a set of medical doctors. Associated with each patient a log of various tests and examination conducted. 10

   (b) Explain lossless join decomposition and dependency preserving decomposition 5

   (c) List four significant differences between file processing system and database management system 5

2. (a) What is a deadlock? How is it detected? Discuss different types of deadlock prevention scheme. 10

   (b) Write SQL queries for the given database 10

   Employee(eid,ename,street,city)

   Works(eid,cid,salary)

   Company(cid,cname,city)

   (i) Modify the database so that Jack now lives in 'Mumbai'

   (ii) Give all employees of 'ANZ Corporation' a 10% raise in salary

   (iii) Find all employee id who live in same cities as the company for which they work

   (iv) Give total number of employees

   (v) Find the highest paid employee

3. (a) What is an attribute? Explain different types of attributes with examples. 10

   (b) Companies manufacture ranges of products which are purchased by customers. The relation schema for this operation is given as :- 10

   Company(company_code,company_name,director#,director_name,{product name, cost, {cust#, customer_name, address}}) where { } represents a repeating groups and company_code, dirctor# and cust# contains unique values. Normalize this relation to third normal form.

TURN OVER

Q. P. Code: 18323

4. (a) Explain following relational algebra operations with examples 10

   (i) set intersection

   (ii) Generalized projection

   (iii) Natural Join

   (iv) Aggregation operator

4 (b) Explain nested loop join and block nested loop join algorithm in query processing. 10

5 (a) Explain Timestamp ordering protocol and Thomas write rule 10

(b) Describe the three level schema architecture of DBMS. State different level of dependencies in this architecture. 10

6 (a) Explain log based recovery 10

(b) Explain Hash join algorithm in query processing 10

Q. P. Code: 18508

(3 Hours) **Total Marks: 80**

N.B.: (1) Question No.**1** is **compulsory**.
(2) Solve any **three** questions out of the remaining questions.
(3) Make **suitable** assumptions if **needed**.

1. (a) Describe Data Independence. 5
   (b) Compare File System and Database System. 5
   (c) Explain ACID properties. 5
   (d) Explain Aggregate Functions in SQL. 5

2. (a) Define Normalization. Discuss different Normalization Techniques with example. 10
   (b) Describe the overall architecture of DBMS with suitable diagram. 10

3. (a) Explain types of integrity constraints with example. 10
   (b) Draw an ER Diagram and convert it into relational model for a Company, which has several Employees working on different types of Projects. Several Employees are working for one Department, every Department has a Manager. Several Employees are supervised by one Employee. 10

4. (a) Discuss Data Definition and Manipulation Commands in SQL. 10
   (b) Explain Security and Authorization in DBMS. 10

5. (a) Explain the following Relational Algebra Operations with example: 10
   i. Cartesian Product iii. Project
   ii. Natural Join iv. Union

   (b) Explain Log based recovery and shadow paging in detail. 10

6. Write Short notes on: 20
   (a) Steps in Query Processing
   (b) Role of Database Administrator
   (c) Deadlocks
   (d) Specialization and Aggregation

****

Q. P. Code : 32479

Time: 3 hours **Marks: 80**

N.B. : (1) Question Number 1 is compulsory
(2) Solve any three Questions from the remaining.
(3) Make suitable assumptions if needed

1. (a) Construct an E-R diagram for a Library Management System. Convert the E-R Diagram to Tables. 10

   (b) Explain Authorization in SQL. 5

   (c) List four significant differences between file processing system and database management system 5

2. (a) Explain Types of Integrity Constraints with example. 10

   (b) Write SQL queries for the given database 10

   Employee(eid,emp-name,street,city)

   Works(eid,cid,salary)

   Company(cid,comp-name, city)

   Manager (eid, manager-name)

   (i) Find the names of all the employees having 'S' as first letter in their Names

   (ii) Display the annual salary of all the employees.

   (iii) Find the name, street and city of all employees who work for "Accenture" and earn more than 30,000.

   (iv) Give total number of employees

3. (a) What is an attribute? Explain different types of attributes with examples. 10

   (b) What is Normalization? Explain 1NF, 2NF, 3NF and BCNF. 10

35B07B2DC6A79DCA08C07EF665CE3DE9

4. (a) Explain following terms with examples 10

(i) Weak Entity Set

(ii) Data Independence

(iii) Extended ER features

(iv) Total and Partial participation

(b) Explain any five Relational Algebra Operators in detail. 10

5 (a) What is Transaction? Discuss the ACID properties of Transaction. 10

(b) Describe the Overall architecture of DBMS with suitable Diagram. 10

6 (a) Explain log based recovery. 10

(b) Write a note on 10

1) Armstrong axioms
2) Thomas write rule

****

35B07B2DC6A79DCA08C07EF665CE3DE9

Paper / Subject Code: 38904 / DATABASE MANAGEMENT SYSTEMS

S.E. SEM IV / COMP / CREDIT BASE / NOV 2018 / 10.12.2018

Q. P. Code:-22552

(3 Hours) **Total Marks: 80**

N.B.: (1) Question No.**1** is **compulsory**.
(2) Solve any **three** questions out of the remaining questions.
(3) Make **suitable** assumptions if **needed**.

1. (a). Explain ACID properties. **5**
(b) Discuss Generalization and Specialization in EER model. **5**
(c) Explain Aggregate Functions in SQL. **5**
(d) Describe Triggers with example. **5**

2. (a) Define Normalization. Discuss different Normalization Techniques with example. **10**
(b) Consider the following database schema: **10**
Employee(employee_name, street, city, date_of_join)
Works(employee_name ,company_name, salary)
Company(company_name, city)
Manages(employee_name, manager_name)
Solve the following queries using SQL:
i. Give all employee of ABC Company a 25% rise.
ii. Find all employees who live in the same cities and on the same street as their manager.
iii. Find all employees who join in the month of April.
iv. Delete the employee Jennifer belonging to XYZ Company.

3. (a) Explain types of integrity constraints with example. **10**
(b) Describe the overall architecture of DBMS with suitable diagram. **10**

4. (a) Draw an ER Diagram and convert it into relational model for a Hospital with a set of patients and set of doctors. Associate with each patient a log of various tests and examinations conducted. **10**

(b) Explain Security and Authorization in DBMS. **10**

5. (a) Explain the following Relational Algebra Operations with example: **10**
i. Cartesian Product iii. Generalized Projection
ii. Natural Join iv. Union
(b) Discuss conflict serializability and view serializability with examples. **10**

6. Write Short notes on: **20**
(a) Steps in Query Processing
(b) Role of Database Administrator
(c) Deadlocks
(d) Data Independence

****

(3 Hours) Total Marks: 80

NOTE:
1. Question no 1 is compulsory question
2. Attemp any three questions from the remaining
3. Assume suitable data if necessary.
4. Figures to the right indicate full marks.

1. (a) Define the following terms. (10)

Trigger,Deadlock, Weak Entity, ,Access Path ,Transaction, Metadata,Assertion, Functional Dependency, Concurrency Control,Constraints

1. (b) Explain Referential Intrgrity and Authorization in SQL. (10)

2. (a) Explain Cost Based Query Optimization (10)

2 (b) Explain implementation of atomicity and durability. (10)

3 (a) Explain lock based , timestamp based,validation based protocols. (10)

3 (b) What is Normalization ?
Explain 1NF, 2NF, 3NF,and BCNF with examples. (10)

4 Consider a AIRLINE Reservation System,

(a) Draw E-R Diagram.Assume suitable data (10)

(b) Convert the E-R diagram into Relational Model (10)

OR

4 (a) Draw E-R Diagram for HOTEL Management System.Assume suitable data (10)

(b) Convert the E-R diagram Que 4(a) into Relational Model (10)

5 (a) Explain Relational algebra queries and Relational calculus with examples (10)

5 (b) Explain aggregate functions and set operations in SQL with examples (10)

6 (a) Explain data control commands in SQL with examples. (10)

6 (b) Explain sort-merge join algorithm in query processing. (10)

****

S.E Computer
Sem-IV R-19

23 MAY 2022

University of Mumbai
Examinations Summer 2022
S.E. (Computer Engineering) (SEM-IV)
(Choice Base Credit Grading System) (R- 19) (C Scheme)
Subject: Database Management System

OP code: 93515

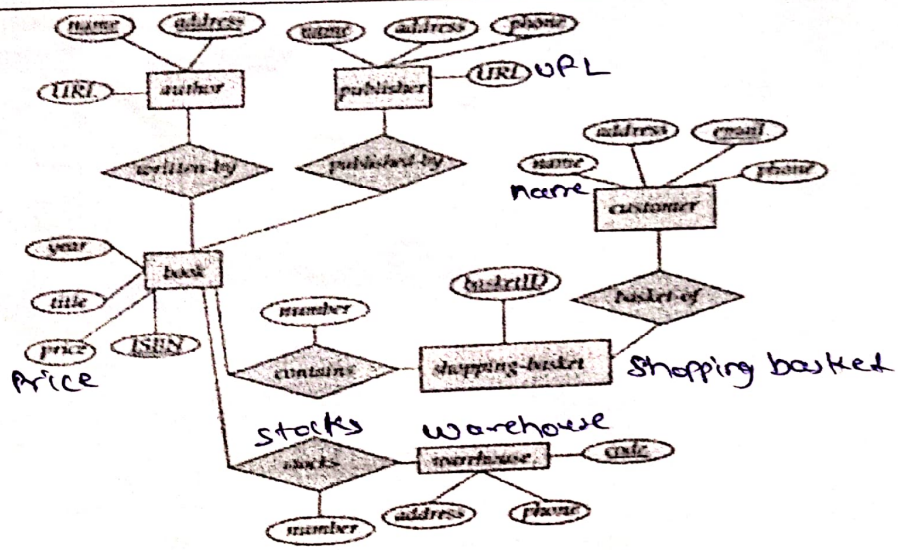
Time: 2 hour 30 minutes

Max. Marks: 80

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	The capacity to alter the database schema at one level without affecting any other levels is termed as
Option A:	Data Independence
Option B:	Data Mapping
Option C:	Data Isolation
Option D:	Data Transformation
2.	An attribute (say A) of entity set is calculated from other attribute value (say B). The attribute A is called
Option A:	Single valued
Option B:	Multi valued
Option C:	Composite
Option D:	Derived
3.	Consider the following relations: Parts (pid,pname,color) PartCost (pid,cost) What does the following relational algebra expression represent? $\Pi_{pid}((\sigma_{color='red'}(Parts)) \bowtie (\sigma_{cost \geq 1000}(PartCost)))$
Option A:	Find the pid of all parts whose color is red.
Option B:	Find the pid of all parts whose color is red or cost ≥ 1000.
Option C:	Find the pid of all parts whose color is red but not cost ≥ 1000.
Option D:	Find the pid of all parts whose color is red and cost ≥ 1000 .
4.	Let E1 and E2 be two entities in an E-R diagram with one multi-valued attribute in E1, R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-many, R1 and R2 do not have any attributes of their own, What is the minimum number of tables required to represent this situation in the relational model.
Option A:	2
Option B:	4
Option C:	3
Option D:	5
5.	Consider the instructor table: INSTRUCTOR (instr_id, name, dept name, salary). insert a new instructor ₹-101', named `PMJ', with 50,000 salary for department ₹COMP'. Identify the appropriate SQL statement.
Option A:	INSERT INTO TABLE INSTRUCTOR VALUES (₹-101','PMJ','COMP', 10,00,000)
Option B:	INSERT INTO INSTRUCTOR (₹-101','PMJ','COMP', 50,000)
Option C:	INSERT INTO INSTRUCTOR VALUES (₹-101', `PMJ', 'COMP', 50,000)

Option D:	INSERT INTO TABLE INSTRUCTOR table instr_id, name, dept name, salary) VALUES (₹-101', 'PMJ', 'COMP', 50,000)
6.	Let R= (A, B, C, D, E, F) be a relation with the following dependencies. B->CE ,C->F, EC->D, A->B. Which of the following is a candidate key for R
Option A:	C
Option B:	E
Option C:	A
Option D:	B
7.	Identify the incorrect statement.
Option A:	3NF doesn't have transitive dependencies
Option B:	Composite attributes are not allowed in 1NF
Option C:	In 2NF, there should not be any Full functional dependencies
Option D:	In BCNF, trivial FD are allowed
8.	If T1,T2 are two transactions and I1 , I2 are two instructions of T1 and T2 respectively then I1 and I2 are conflicting instructions if
Option A:	They operate on the different data item
Option B:	They belong to different transactions
Option C:	At Least one of them is a write operation
Option D:	At Least one of them is a read operation
9.	Choose the correct option
Option A:	Every Conflict serializable schedule is also View serializable
Option B:	Every View serializable schedule is also conflict serializable
Option C:	Both a and b
Option D:	Every serial schedule has same conflict and view equivalent schedule
10.	When a transaction is aborted due to ant kind of failure,which instruction should be executed to keep database in consistent state
Option A:	Commit
Option B:	Rollback
Option C:	Savepoint
Option D:	Checkpoint

Q2	**Solve any Two Questions out of Three 10 marks each**
A	Short note on Data Independence. Define DBA Discuss roll and responsibilities of DBA.
B	Convert following E-R diagram to relational schema and equivalent schema diagram

	
C	Explain following relational algebra operators with example a) Select: σ b) Project: ∏ c) Union: ∪ d) Rename e) Natural join

Q3	Solve any Two Questions out of Three 10 marks each
A	Book (book_id, title,author, cost) Store (store_no, city, state, inventory_val) Stock (store_no, book_id,quantity) Consider above relational schema and formulate SQL queries for the following: (i)Modify the cost of DBMS books by 10% (ii)Find the author of the books which are available in Mumbai store (iii)Find the title of the most expensive book (iv)Find the total quantity of books in each store (v) Add a new record in Book (Assume values as per requirement)
B	Why there is need of normalization? Explain 1NF,2NF,3NF and BCNF with examples.
C	Design an EER schema for a **BANK** database. Each bank can have multiple branches, and each branch can have multiple accounts and loans. Bank keeps the track of different types of Accounts (Saving_aacount, Checking_account), Loans (Car_loans,Home_loans,…) , each account's Transaction (deposit, withdrawal,check,..) and each loan's Payments; both of these include the amount, date and time. State any assumptions you make about the additional requirement clearly.

Q4	Solve any Two Questions out of Three 10 marks each
A	What is Deadlock and explain deadlock handling in DBMS with Example.

B	**A schedule has transactions T1, T2, T3 has given below:** **T1** / **T2** / **T3** READ(X) READ(Z) READ(Z) READ(X) READ(Y) WRITE(X) WRITE(Y) READ(Y) WRITE(Z) WRITE(Y) a) What is conflict and view serializability? b) Draw a Precedence graph? c) Is schedule conflict serializable or not? d) Find equivalent serial schedule?
C	Describe ACID properties with examples and draw state transition diagram of transaction.