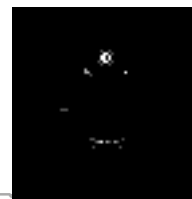


CS/B.TECH(ECE) (SUPPLE)/SEM-7/EC-704C/09
DATABASE MANAGEMENT SYSTEM (SEMESTER - 7)



1.
Signature of Invigilator

2.
Signature of the Officer-in-Charge

Reg. No.

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Roll No. of the
Candidate

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CS/B.TECH(ECE) (SUPPLE)/SEM-7/EC-704C/09
ENGINEERING & MANAGEMENT EXAMINATIONS, JULY – 2009
DATABASE MANAGEMENT SYSTEM (SEMESTER - 7)

Time : 3 Hours]

[Full Marks : 70

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. a) In **Group – A**, Questions are of Multiple Choice type. You have to write the correct choice in the box provided **against each question**.
b) For **Groups – B & C** you have to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group – B** are Short answer type. Questions of **Group – C** are Long answer type. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

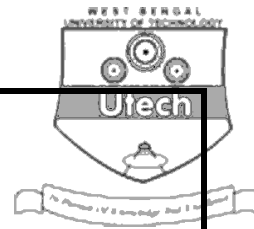
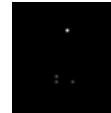
FOR OFFICE USE / EVALUATION ONLY

Marks Obtained

	Group – A										Group – B					Group – C					Total Marks	Examiner's Signature
Question Number																						
Marks Obtained																						

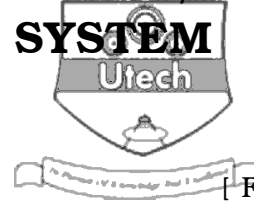
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Head-Examiner/Co-Ordinator/Scrutineer

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CS/B.TECH(ECE) (SUPPLE)/SEM-7/EC-704C/09
DATABASE MANAGEMENT SYSTEM
SEMESTER - 7



Time : 3 Hours]

Full Marks : 70

GROUP – A**(Multiple Choice Type Questions)**1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

i) View is

- a) Temporary table
- b) Virtual table
- c) SQL statement
- d) Query.

ii) Performance of transaction is caused by

- a) consistency
- b) durability
- c) isolation
- d) atomicity.

iii) A relation can have only one

- a) CK
- b) PK
- c) FK
- d) SK.

iv) Which rule guarantees that every PK attribute is not NULL ?

- a) Referential integrity
- b) Entity integrity
- c) Domain constraint
- d) Operational constraint.



v) The closest database level to physical storage is

- a) Internal level
- b) External level
- c) Logical level
- d) Conceptual level.

vi) When association is maintained between two entities, relation is called

- a) Unary
- b) Binary
- c) Ternary
- d) Quaternary.

vii) Result of transitive dependency is

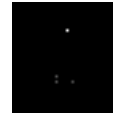
- a) Insertion anomaly
- b) Modification anomaly
- c) Deletion anomaly
- d) all of these.

viii) Which is the process of building database structure to store data ?

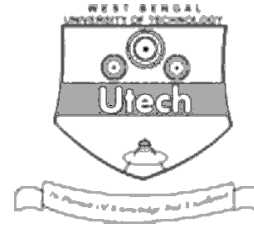
- a) Concurrency management
- b) Optimization
- c) Compilation
- d) Normalization.

ix) Operation required choosing only certain attributes of a relation

- a) Select
- b) Project
- c) Union



- d) Natural join.
- x) Which is not a DML statement ?
- a) COMMIT
- b) UPDATE
- c) DELETE
- d) INSERT.
- xi) Which of the following is not a comparison operator used in SELECT statement ?
- a) IN
- b) BETWEEN
- c) LIKE
- d) OR.

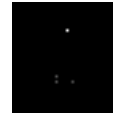
**GROUP – B****(Short Answer Type Questions)**Answer any *three* of the following.

3 × 5 = 15

2. a) What is referential integrity ? 2
- b) What is schema ? Define degree and cardinality of relational schema. 1 + 2
3. Discuss ACID properties of transaction.
4. a) Mention one advantage and one disadvantage of normalization. 1 + 1
- b) What is closure of a set of attributes ? Prove General Unification Theorem. 1 + 2
5. Consider the following two relational schema :

Employee (emp_name, street, city)Branch (emp_name, br_name, sal)

Show the results of left outer join, right outer join & full outer join with suitable data.



6. a) What is embedded SQL ? 2
- b) Why is digital signature important for authentication purpose? 3



GROUP – C
(Long Answer Type Questions)

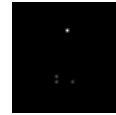
Answer any *three* questions.

3 × 15 = 45

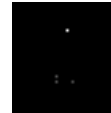
7. a) Describe a locking protocol which guarantees serializability. 5
- b) How is Deadlock situation recovered ? 4
- c) Briefly discuss two algorithms for Deadlock prevention. 3
- d) What is Recovery Management ? 3
8. a) Describe three-tier architecture of database system. 4
- b) Discuss the types of data independence in connection with DBMS. 3
- c) Why are null values not allowed in primary key ? What is the difference between Superkey and Candidate key ? 2 + 1
- d) Relvar R { A, B, C, D, E, F } satisfies the following FD's :
- $AB \rightarrow C, C \rightarrow A, BC \rightarrow D, ACD \rightarrow B, BE \rightarrow C, CE \rightarrow FA, CF \rightarrow BD, D \rightarrow EF$
- Find an irreducible equivalent for this set of FD's. 5
9. a) A company obtains parts from a no. of suppliers, Each supplier is located in one city. A city can have more than one supplier and each has a status code. Each supplier may provide many parts.

For this problem, consider the following relation :

s #	city	status	p #	qty
s1	London	20	p1	300
s1	London	20	p2	100
s1	London	20	p3	200
s1	London	20	p4	100
s2	Paris	10	p1	250
s2	Paris	10	p3	100
s3	Tokyo	30	p2	300
s3	Tokyo	30	p4	200



- Find out the anomalies in the given relation and derive 3NF form. Show anomalies in each stage and discuss how they are removed in next stage. 12
- b) What is Boyce-Codd normal form ? 3
10. a) Draw the E-R diagram for banking system considering at least 7 entities. List the corresponding attributes of each entity and mention the PK of each relation. 8
- b) What are DDL & DML ? 3
- c) How is data mining related with data warehousing ? 2
- d) What are trivial & non-trivial dependencies ? 2
11. a) Consider the following relational schema and write queries in relational algebra :
- Employee (emp_name, street, city)
- Account (emp_name, company, salary)
- Company (company_name, city)
- Manager (emp_name, manager-name)
- i) Find the name of the employees who live in the same city.
- ii) Find the name of the employees who live in the same city and on the same street as do their managers.
- iii) Find the salary of the employees who live in the same city where their offices are. 6
- b) Consider the following relational schema and write queries in SQL :
- Customer (cus_name, street, cus_city)
- Branch (br_name, br_city, assets)
- Account (acc_num, br_name, balance)
- Depositor (cus_name, acc_num)
- Loan (lo_num, br_name, amount)
- Borrower (cus_name, lo_num) .
- i) Find name, loan numbers and loan amount of the customers who have a loan from the bank
- ii) Find the name of all branches that have assets greater than at least one branch located in Park Street.
- iii) Find the average balance for each customer who lives in College Street and has more than one account.



- iv) Find all branches where total deposited account is greater than the average of total account deposits at all branches.

9

END

