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Name :	
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Invigilator's Signature :	

DATABASE MANAGEMENT SYSTEM

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A (Multiple Choice Type Questions)

- 1. Choose the correct alternatives of the following: $10 \times 1 = 10$
 - i) Data structure of the data stored in a database is dealtby
 - a) external schema
 - b) conceptual schema
 - c) internal schema
 - d) varies with different databases.

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ii)	No.	of entities attached	with	a relationship		
	••••	of the relation	on.	On Photography (NY States in		
	a)	complexity	b)	cardinality		
	c)	degree	d)	functionality.		
iii)	Mul	Multi-valued dependency (MVD) is removed in				
	a)	3NF	b)	4NF		
	c)	5NF	d)	BCNF.		
iv)	Fou	r DML commands are				
	a)	CREATE, UPDATE, D	ELET:	E, SELECT		
	b)	INSERT, UPDATE, DROP, SELECT				
	c)	CREATE, ALTER, DELETE, SELECT				
	d)	INSERT, MODIFY, DE	LETE	, SELECT		
	e)	INSERT, UPDATE, DE	CLETE	C, SELECT.		
v)	One	e of the shortcomings of	f file s	ystem is		
	a)	data availability				
	b)	fixed records				
	c)	sequential records				
	d)	lack of security.				

CS/B.Tech(ECE-NEW)/SEM-7/EC-704

vi) Given the relation schema Bank (BankID, AccountNumb, Balance, Customer) with FDs:

 $\{$ BankID, Account Numb \varnothing Balance ;

BankID, Account Numb Ø Customer;

Customer Ø BankID }

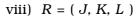
What is the highest normal form for the relation schema Bank?

a) First

b) Second

c) Third

- d) Boyce coed.
- vii) Which is not a set operator?
 - a) UNION
 - b) INTERSECT
 - c) MINUS
 - d) LIKE.



 $F = (JK \varnothing L, L \varnothing K)$



The candidate keys are

- a) J and K
- b) *JK*

c) only J

- d) JK and JL.
- ix) Which of the following is a recovery technique that does not need logs?
 - a) Deferred updates
- b) Immediate update
- c) Shadow paging
- d) None of these.
- x) What is a relationship called when an association is maintained within a single entity?
 - a) Unary

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

GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$

- 2. Explain the term 'strong and weak relationship'.
- 3. Explain the concept of a trigger with suitable example. Why is B^+ tree advantageous over B tree? 3+2
- 4. What do you mean by integrity constraint? "Primary key is one type of integrity constraint" Explain. 2 + 3

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5.	a)	What do you mean by the cardinality of a relationship	p ?
		Explain.	n
	b)	Give example of a composite attribute. 4	+ 1
6.	a)	What is growing and shrinking phase of the two-phase	ase
		locking protocol ?	
	b)	What do you mean by granularity of a lock?	
	c)	What are the differences between the dense index a	ınd
		the sparse index ? $1 + 2$	+ 2
		GROUP – C	
		(Long Answer Type Questions)	
		Answer any <i>three</i> of the following. $3 \times 15 =$	45
7.	a)	What is the function of data dictionary?	3
	b)	What do you mean by serializability?	3
	c)	What is two-phase locking protocol?	3
	d)	Draw an ERD for banking system.	6
8.	a)	Define phantom deadlock.	3
	b)	Describe different deadlock detection techniques.	3
	c)	What is hashing?	3

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- d) What are the advantages of embedded SQL program?
- e) What are different types of join operation?
- 9. a) Consider the following relational schema:

CUSTOMER (cid, cname, city, discnt)

AGENTS (aid, aname, city, percent)

PRODUCTS (pid, pname, city, qty, price)

ORDERS (ordno, month, cid, aid, pid, qty, rupees)

where the underlined column names are primary keys.

Write down the expressions in specified languages for each of the following queries :

- i) Find all customer id, agent id and product id for customer, agent and product combinations that are all in the same city (relational algebra).
- ii) Get the names of agents who place orders for all products ordered by customer C003 (relational algebra).
- iii) Get product names ordered by at least one customer based in Bangalore through an agent based in Mumbai (SQL).
- iv) Find customer ids of customers who have largest discount; separately find those who have smallest discount (SQL).
- b) Justify the following statement:

"SQL is relationally complete."

3

CS/B.Tech(ECE-NEW)/SEM-7/EC-704 Define outer join with an example. 3 10. a) b) Explain the difference between base table and view table. 4 Write different types of locks and their use c) concurrency control with suitable example. 5 d) What do you mean by query processing? How can it be done? 11. Write short notes on any *three* of the following : 3×5 Data dictionary a) Two-phase locking protocol b) c) Deadlock recovery d) Functional dependency

ACID properties of transaction

Armstrong's Axioms.

e)

f)