Total No of Questions: [12] *SEAT NO. :*

[Total No. of Pages : 3]

T.E. Computer

(Database Management Systems)

(310241)(Course 2008) (Semester - I)

Time: 3 Hours *Max. Marks : 100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Answer any three questions from each section.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Assume Suitable data if necessary.***

SECTION I

Q1)	a)	What is meant by Mapping Cardinality? Explain different types of Cardinalities for a binary relationship with example.	[4]
	b)	Differentiate between primary Key constraint & Foreign key constraint.	[4]
	c)	Explain extended ER features Specialization, Generalization and Aggregation with Example and diagrams.	[8]
		OR	
Q2)	a)	Explain the advantages of DBMS over normal file system in detail.	[8]
	b)	Write short note on DDL, DML and DCL.	[4]
	c)	Explain: Schema, instance, Primary Key, Super Key.	[4]
Q3)	a)	Explain any four relational algebra operations with example.	[8]
	b)	Explain in detail CODD's Rules.	[8]
		OR	
Q4)	a)	Consider the following database professor(profname, deptname) department(deptname, building) committee(commname, profname) Represent following queries in relational algebra 1. Find all the professors who are in any one of the committees that Professor Strangway is in. 2. Find all the professors who are in at least all those committees that Professor Strangway is in. 3. Find all the professors who are in exactly (i.e. no more and no less) all those committees that Professor Strangway is in. 4. Find all the professors who have offices in at least all those buildings that Professor Strangway has offices in.	[8]
	b)	Explain different types of Joins with example.	[8]

Q5)	a)	a) What do you mean by "Decomposition"? What are the desirable properties of it? How can we implement them?	[8]
	b)	Write short note on: 1. Multivalued Dependency 2. Join dependency	[8]
		OR	
Q6)	a)	Define BCNF. Differentiate between BCNF & 3NF. How it is stronger than 3NF.	[8]
	b)	State & prove Armstrong's Axioms rules for functional dependencies.	[8]
		SECTION II	
Q7)	a)	Explain in detail use of B-Tree as an indexing technique and compare B- Tree with B+ Tree.	[6]
	b)	How can we estimate a cost of query	[4]
	c)	What is role of relational algebra in query processing	[6]
		OR	
Q8)	a)	What are the steps involved in query processing. Explain each in brief with diagram.	[8]
	b)	What are the advantages and disadvantages of hash indices relative to B tree indices? How might the type of index influence the query processing?	[8]
Q9)	a)	Explain the concept of "transaction'. Describe ACID properties for transaction.	[8]
	b)	Explain View and conflict serializability with suitable example.	[8]
		OR	
Q10)	a)	Explain recoverable and cascade less schedules.	[8]
	b)	Explain two phase locking protocol. How does it ensure serializability?	[8]
Q11)	a)	What are advantages and disadvantages of distributed database system architecture?	[6]
	b)	Write short note on Persistent programming language.	[6]
	c)	Compare: Relational model Vs Object-oriented model	[6]
		OR	
Q12)	a)	What is the difference between persistent and transient objects? How persistence object is handled in the typical OO Database system?	[8]
	b)	Explain centralized and client server database architecture.	[6]