

# DATA BASE MANAGEMENT SYSTEM CS503

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. Answer any **ten** from the following, choosing the correct alternative of each question: **10×1=10**

SL. NO.	Question	Marks	CO No.	Blooms Taxonomy Level
(i)	DROP is a _____ statement in SQL. a) Query b) Embedded SQL c) DDL d) DCL	1	1	5
(ii)	Student and courses enrolled relationship is an example of a) one-to-one b) one-to-many c) many-to-one d) many-to-many	1	1	3
(iii)	In an E-R diagram ellipse represent a) entity set b) relationship among entity sets c) attributes d) link between attributes and entity sets	1	1	1
(iv)	2NF is always in a) 1NF b) BCNF c) MVD d) none of these	1	2	4
(v)	The subset of a super key is a candidate key under what condition? a) No proper subset is a super key b) All subsets are super keys c) Subset is a super key d) Each subset is a super key	1	2	6
(vi)	Which of the following is not a level of data abstraction? a) Physical Level	1	1	2

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	b) Critical Level			
	c) Logical Level			
	d) View Level			
(vii)	An attribute of one table matching the primary key of another table, is called as	1	2	4
	a) Foreign key			
	b) secondary key			
	c) candidate key			
	d) composite key			
(viii)	DML implies the command	1	3	3
	a) SELECT			
	b) UPDATE			
	c) DELETE & INSERT			
	d) All the above			
(ix)	Which of the following is not binary operation?	1	3	4
	a) Union			
	b) Project			
	c) Set Difference			
	d) Cartesian Product			
(x)	A table can be logically connected to another table by defining a -	1	4	4
	a) Hyperlink			
	b) Common field			
	c) primary key			
	d) foreign key			
(xi)	A domain is atomic if elements of the domain are considered to be _____ units.	1	5	1
	a) Different			
	b) Indivisible			
	c) Constant			
	d) Divisible			
(xii)	Which of the following statements contains an error?	1	3	4
	a) Select * from emp where empid = 10003;			
	b) Select empid from emp where empid = 10006;			
	c) Select empid from emp;			
	d) Select empid where empid = 1009 and lastname = 'GELLER';			

**GROUP – B\***  
**(Short Answer Type Questions)**

Answer any **three** from the following: **3×5=15**

SL. NO.	Question	Marks	CO No.	Blooms Taxonomy Level
2. (a)	Describe the three-level architecture of DBMS ?	3	5	1

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	(b)	Explain its importance in a database environment	2	5	4
3.	(a)	Discuss in detail the operators SELECT, PROJECT, UNION with suitable example?	3	3	2
	(b)	Define derived attribute with example.	2	2	1
4.		What is meant by term relationship between entities? Explain with example.	5	2	2
5.	(a)	Differentiate between primary key and a candidate key.	2	4	4
	(b)	Explain about domain constraints and key constraints.	3	3	2
6.		Differentiate between B-tree and B+ tree.	5	4	6

**GROUP – C\***  
**(Long Answer Type Questions)**

Answer any *three* from the following: **3×15=45**

SL. NO.		Question	Marks	CO No.	Blooms Taxonomy Level
7.	(a)	What are the difference between DBMS and file Management System.	5	5	1
	(b)	State Armstrong three axioms.	5	3	2
	(c)	What do you mean by redundancy? How this can be avoided?	5	5	4
8.		lives ( <u>person-name</u> ,street,city) works ( <u>person-name</u> , company-name,salary) located-in( <u>company-name</u> ,city) manages( <u>person-name</u> ,manager-name)	15	3	3

For the above schema (the primary key for each relation is denoted by the underlined attribute), provide relational algebra expressions for the following queries -

- 1 Find the name and city of all employees who work for City Bank
- 2 Find the name, street and city of all employees who work for City Bank and earn more than \$10,000
- 3 Find all employees who live in the same city as the company they work for.
- 4 Find all persons who do not work for City Bank.
- 5 Find all employees who live in the same city and on the same street as their manager.

9.	(a)	Describe ACID properties of transaction.	7	3	2
	(b)	Consider Following Schema Employee (ENO, ENAME, Department, Designation, DOJ, Salary,	8	4	6

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Dept\_Location)

Solve the following query :

(i) List the employees having Designation as “Manager” and .Dept\_Location as “Mumbai”

(ii) Set the salary as Rs.50,000/- having Designation as “Project Leader”

(iii) List ENO, ENAME, Salary of employees having Salary between Rs. 20,000/- to Rs.30,000/-

10.	(a)	Define generalization and aggregation. Demonstrate generalization and aggregation using E-R diagram.	6	1	1
	(b)	Define normalization. Enlist its type.	4	4	1
	(c)	“Every relation in BCNF is also in 3NF; however, a relation in 3NF is not necessarily in BCNF” -Explain	5	3	5
11.		Write Short Notes on any <b>THREE</b> (5X3=15)			
	(a)	4NF	5	2	2
	(b)	Advantages of Concurrency Control	5	3	4
	(c)	Query optimization	5	2	6
	(d)	Ternary relationship	5	1	2
	(e)	Dead lock	5	2	1