GURU NANAK INSTITUTE OF TECHNOLOGY
An Autonomous Institute under MAKAUT
2022
DATABASE MANAGEMENT SYSTEM (Backlog)
EI605B

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)

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

			Marks	CO No.
1.	(i)	The entity integrity constraint states that a) Meta data b) Tera data c) Hyper data d) None of these	1	CO5
	(ii)	Which of the following is correct? a) An SQL query automatically eliminates duplicates b) An SQL query will not work if there are no indices on the relations c) SQL permits attribute names to be repeated in the same relation d) None of these	1	CO3
	(iii)	Second Normal Form a) Eliminates transitive dependency between non-key attributes and key attributes b) Eliminates partial dependency between non-key attributes and key attributes c) Creates separate tables for the set of values that apply to multiple records d) Creates a separate table for each set of related data and identify a primary key for each such set	1	CO2
	(iv)	Which of the following is the way to undo the effects of an aborted transaction? a) Compensation transaction b) Roll back c) Recovery d) Error control	1	CO4
	(v)	The entity integrity constraint states that a) no primary key value can be null b) a part of the key may be null c) duplicate object values are allowed d) none of these	1	CO1

(vi)	In order to permanently remove all the data from the STUDENT table without changing its structure, you need to execute which of the following queries? a) DROP TABLE STUDENT b) DELETE ALL FROM STUDENT c) DROP ALL FROM STUDENT d) DELETE FROM STUDENT	1	CO3
(vii)	SELECT operation in SQL is a a) data query language b) data manipulation language c) data definition language d) data control language	1	CO3
(viii)	Domain can be defined as a) The value of a field b) Value of a tuple c) Value of a table d) None of these	1	CO1
(ix)	The concurrency control has the problem of a) Lost updates b) Dirty read c) Repeatable read d) All of these	1	CO4
(x)	The ability to modify the internal schema without causing any change to the external schema a) Physical data independence b) Logical data independence c) External data independence d) None of these	1	CO5
(xi)	In a relational data model, the columns of a table are called a) relation b) tuple c) attribute d) degree	1	CO5
(xii)	Which of the following operations is used if we are interested in only certain columns of a table? a) PROJECT b) SELECT c) UNION d) JOIN	1	CO3

GROUP – B
(Short Answer Type Questions)

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

		Marks	CO No.
2.	Discuss the ACID properties of database transaction.	5	CO4
3.	What are the advantages of DBMS over conventional file system? Explain in brief.	5	CO5
4.	Explain with example "BCNF is stricter than 3NF".	5	CO2

5.	(a)	What do you mean by degree and cardinality ratio of a relationship?	2	CO1
	(b)	What is the difference between 'Strong Entity Set' & 'Weak Entity Set'?	3	CO1
6.		Explain in brief 3-schema architecture of DBMS.	5	CO5

GROUP – C
(Long Answer Type Questions)

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

			Marks	CO No.
7.	(a)	Draw the ER diagram of Hospital Management System and explain.	9	CO1
	(b)	What is recursive relationship? Give an example.	2	CO1
	(c)	Explain generalization, specialization and aggregation in Enhanced Entity Relational model.	4	CO1
8.	(a)	What do you mean by transaction? Explain the transaction states.	6	CO4
	(b)	Explain log-based recovery and checkpoints.	4	CO4
	(c)	What is shadow paging?	2	CO4
	(d)	Explain Deadlock handling.	3	CO4
9.	(a)	Discuss "insertion anomalies" with an example. Suggest a method to overcome from it.	3	CO2
	(b)	Given a relational schema: Supply (sno, city, status, pno, qty) with FD set F = {sno -> city, city -> status, {sno, pno} -> qty} Find the key of the schema. Also reduce it into 3NF.	7	CO2
	(c)	Define MVD with suitable example.	2	CO2
	(d)	Explain partial dependency and transitive dependency with examples.	3	CO2
10.		Consider the employee database: Employee (e_name, e_id, street) Works (e_name, company_name, salary) Company (company_name, city) Write the appropriate SQL statements on the basis of the above relations:		
	(a)	Find the names and cities of residence of all employees who work for UBI and earn more than Rs.50,000/-.	3	CO3
	(b)	Find the names, street address and cities of residence of all employees who work for UBI.	3	CO3
	(c)	Find all the employees in the database who do not work for UBI.	3	CO3
	(d)	Find the 2nd highest salaried employee of UBI.	3	CO3
	(e)	Find the company name which has most employees.	3	CO3
11.		Write short note on any three of following:	3 x 5 = 15	
	(a)	DBMS users	5	CO5
	(b)	File indexing	5	CO5
	(c)	Inner join and outer join	5	CO3
	(d)	Data base models	5	CO5
	(e)	Two-phase locking protocol	5	CO4