GR20A2070

GR20

Gokaraju Rangaraju Institute of Engineering and Technology

(Autonomous)

II B.Tech I Semester MID -I Examination

DATABASE MANAGEMENT SYSTEMS

(Department of CSE, IT, AIML, DS)

Time: 90 Minutes **Max Marks: 15**

Answer ALL questions. All questions carry equal marks

3 * 5 = 15 Marks

Q.No	Questions	Marks	CO	BL	PI
1.	(a) List the advantages of DBMS over File Systems.	[3]	1	1	1.4.1
	(b) Develop an ER Diagram for the following specifications: Employees have employeeID, last name, salary and email. Departments have departmentID, department name. Employees work in the departments. Identify the type of mapping cardinality and depict it.	[2]	1	5	2.3.2
	OR				
2.	(a) Describe how the details of database can be abstracted from the users?	[3]	1	2	1.4.1
	(b) Illustrate the following concepts (i) Specialization (ii) Aggregation	[2]	1	2	2.3.2
3.	(a) Summarize the concept of aggregate operators.	[3]	3	2	1.1.1
	(b) Solve the following queries: (i) Display the department number and minimum salary greater than that of department number 50. (ii) Display the employee name, designation and salary of employees whose salary is greater than that of employee with ID 107.	[2]	3	3	2.2.3
	OR				
4.	(a) What is a cursor? Explain the types of cursors with an example.	[3]	3	1	2.3.1
	(b) Discuss the concept of Views with an example?	[2]	3	3	2.2.3
5.	(a) Define (a) Primary Key (b) Foreign Key Explain with syntax and example.	[3]	2	1	3.2.2
	(b) Outline any two operators in Relational algebra with their syntax and examples.	[2]	2	2	2.1.3
	OR				
6.	(a) Differentiate Tuple Relational Calculus from Domain Relational Calculus.	[3]	2	4	2.2.4
	(b) What is Database Schema and Instance. Give an example.	[2]	2	1	1.1.1

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Time: 10 Minutes **Max Marks: 5**

Answer all Objective Questions. All questions carry equal marks

Q.No	Questions	Option	CO	BL	PI
1	In a Hierarchical model, records are organized as a) Graph b)List c)Tree d) Links	[ ]	1	1	1.4.1
2	_____ produces the relation that has attributes of R1 but not R2. a) Cartesian product b) Minus c) Intersection d) Product	[ ]	2	3	1.1.1
3	____ Operator is used when the sub query retrieves multiple records. a) IN b) ANY c) Both d) None	[ ]	3	3	1.4.1
4	An entity set that does not have sufficient attributes to form a primary key is a _____. a) Strong entity set b) Weak entity set c) Simple entity set d) Primary entity	[ ]	1	2	2.3.4
5	The Command in SQL which allows changing the definition of a table is __ a) ALTER b) UPDATE c) MODIFY d) CHANGE	[ ]	2	2	2.3.1
6	In the relational model, cardinality is termed as: a) Number of tuples b) Number of attributes c) Number of tables d) Number of constraints	[ ]	3	1	2.4.1
7	In ___, the common features are identified from sub entities to form super entity. a) Generalization b) Specialization c) Aggregation d) a & b	[ ]	1	1	2.4.3
8	SQL is _____ Language. a) Non - procedural b) Procedural c) Any of these d) None	[ ]	3	2	2.3.1
9	_____ Attribute can hold more than one value at a time. a) Composite Attributes b) Multi valued Attributes c) Stored Attributes d) Derived Attributes	[ ]	1	2	2.4.2
10	_____ has complete control over the database. a) Naïve User b) Sophisticated User c) Application Programmer d) DBA	[ ]	1	1	1.4.1

BL – Bloom's Taxonomy Levels
CO – Course Outcomes
PI – Performance Indicator Code

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Time: 90 Minutes **Max Marks: 15**

Answer ALL questions. All questions carry equal marks

3 * 5 = 15 Marks

Q.No	Questions	Marks	CO	BL	PI
1.	(a) What is Indexing? Discuss pros and cons of Indexing.	[3]	3	4	2.3.2 2.4.3
	(b) Describe Hash based Indexing with suitable example.	[2]	3	2	2.3.1
	OR				
2.	(a) Describe different File Organizations in DBMS	[3]	3	2	1.4.1
	(b) Briefly Describe the significance of B+ Trees.	[2]	3	3	3.2.2
3.	(a) What is redundancy? Explain with suitable examples the problems caused by redundancy.	[3]	4	2	2.3.2 2.4.3
	(b) List out the properties of Decomposition. Explain each.	[2]	4	2	3.4.3
	OR				
4.	(a) Define Normalization. Explain Different types of Normal forms with examples.	[3]	4	2	4.3.3
	(b) Distinguish between 3NF and BCNF	[2]	4	4	3.4.3
5.	(a) Discuss briefly Serializability.	[2]	5	2	2.2.2
	(b) Show how ACID Properties ensure integrity of Data and Database Systems ?	[3]	5	4	2.3.1
	OR				
6.	(a) How does the Two Phase locking protocol ensures Serializability? Elaborate.	[3]	5	4	2.2.3
	(b) Describe in detail Log Based Recovery Technique.	[2]	5	2	2.2.2

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Time: 10 Minutes **Max Marks: 5**

Answer all Objective Questions. All questions carry equal marks

Q.No	Questions	Option	CO	BL	PI
1	____ _____operation is reading uncommitted data. (a) Dirty Read (b) Dirty Write (c) Blind Write (d) None	[ ]	5	1	2.3.2
2	_____ lock is read-only mode of locking. (a) Exclusive Lock (b) Shared Lock (c) Both (d) None	[ ]	5	1	2.3.1
3	_____functional dependency exists between non-key attributes in a relation. (a) Trivial (b) Non-Trivial (c) Transitive (d) Partial	[ ]	4	3	2.4.3
4	In _____indexing, the order of index file and data file are same (a) Primary (b) Secondary (c) Both (d) None	[ ]	3	1	2,2,2
5	_____ensures that all determinants are keys in a relation. (a) 2NF (b) 3NF (c) BCNF (d) 4NF	[ ]	4	3	3.2.2
6	Given R(A,B,C,G,H,I) F={A→B, A→C, CG→H, CG→I, B→H}. Which of the following does not holds. (a)A->C (b)AG->H (c)AG->I (d)B->C	[ ]	4	3	2.1.3
7	_____state of transaction resembles that final statement of transaction executed but commit not executed. (a) Active (b)Aborted (c) Partially committed. (d)Failed	[ ]	5	2	2.3.1
8	Which of the following pair is not conflict a) li = read(Q), lj = read(Q). b) li = read(Q), lj = write(Q). c) li = write(Q), lj = read(Q). d) li = write(Q), lj = write(Q).	[ ]	5	4	2.1.3
9	A transaction consists of blind writes if a) two writes on same data item b) two read on same data item b) read without write d) write without read	[ ]	5	1	2.3.1
10	In _____phase the transaction can only acquire locks, but cannot release any lock. a) Growing b) Shrinking c) Any of them d) Not decidable	[ ]	5	1	2.2.2

BL – Bloom's Taxonomy Levels
CO – Course Outcomes
PI – Performance Indicator Code3

CODE: GR20A2070 | GR 20 | SET - 1

II B.Tech I Semester Regular Examinations, February/March 2023

DATABASE MANAGEMENT SYSTEMS
(Common to CSE, AIML & DS)

Time: 3 hours **Max Marks: 70**

Instructions:

1. Question paper comprises of **Part-A** and **Part-B**
2. **Part-A** (for 20 marks) must be answered at one place in the answer book.
3. **Part-B** (for 50 marks) consists of **five questions with internal choice,** answer all questions.
4. **CO** means Course Outcomes. **BL** means Blooms Taxonomy Levels.

PART – A
(Answer ALL questions. All questions carry equal marks)

10 * 2 = 20 Marks

1. a.	Define an Instance and Schema.	**[2]**	CO1	BL1
b.	What is Conceptual Schema?	**[2]**	CO1	BL1
c.	Define Domain Relational Calculus.	**[2]**	CO2	BL1
d.	Write a SQL statement to display average of salaries from employee table without using AVG function.	**[2]**	CO2	BL2
e.	Differentiate between Unique key and Primary Key.	**[2]**	CO3	BL2
f.	Define the terms Indexing and Hashing.	**[2]**	CO3	BL1
g.	What is meant by Functional dependencies?	**[2]**	CO4	BL1
h.	Differentiate between 3 NF and BCNF.	**[2]**	CO4	BL2
i.	What do you mean by serializability? Give its types.	**[2]**	CO5	BL1
j.	Define shadow paging.	**[2]**	CO5	BL1

PART – B
(Answer ALL questions. All questions carry equal marks)

5 * 10 = 50 Marks

2.	**(a)** Draw and explain the overall system structure of DBMS with a neat diagram	**[10]**	CO1	BL2
	(b) What is a Join? Give its importance in databases and also explain different types of Joins with suitable examples.			BL1
	OR			
3.	**(a)** What is data independence? Discuss physical data independence and logical data Independence.	**[10]**	CO1	BL1
	(b) List and explain various elements used in Entity-Relationship. Give its notations.			BL2

4.	(a) Write short notes on the following: i) Cursors ii) Views iii) Active databases	[6]	CO2	BL2
	(b) List and explain aggregate functions used in SQL with examples.	[4]		BL2
	OR			
5.	(a) What are the set operators in SQL? Give one Sql statements for each	[10]	CO2	BL1
	(b) Illustrate the usage of GROUP BY, ORDER BY and HAVING clauses in SQL.			BL2
6.	(a) Illustrate different set operations in Relational algebra with an example.	[10]	CO3	BL2
	(b) Distinguish between i) Primary and Secondary indexing. ii) Ordered indexing and hashing			BL2
	OR			
7.	(a) Differentiate between tuple relational calculus and domain relational calculus.	[10]	CO3	BL2
	(b) Explain the concept of Static and Dynamic hashing techniques with a neat diagram			BL2
8.	(a) Explain the purpose of normalization and schema refinement in databases.	[10]	CO4	BL2
	(b) Illustrate lossless and lossy decompositions with suitable example.			BL2
	OR			
9.	(a) What is the importance of Normalization in databases? Explain 1NF, 2NF with suitable examples.	[10]	CO4	BL1
	(b) Given R(ABCDEF) and list of functional dependencies: $A \rightarrow BC$, $B \rightarrow E$, $CD \rightarrow F$ Calculate AB^+.			BL3
10.	(a) What is a transaction? Draw and explain the five-state transaction diagram.	[10]	CO5	BL1
	(b) What are deferred modification and immediate modification techniques for recovery? How does recovery take place in case of a failure in these techniques?			BL1
	OR			
11.	(a) Explain how Checkpoints are used in Transaction Management?	[10]	CO5	BL2
	(b) Explain Two Phase -Locking protocol. What benefit does strict two phase locking protocol provides? Discuss its disadvantages.			BL2

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