



Enrollment No.....

Faculty of Engineering

End Sem (Even) Examination May-2019

CS3CO25/IT3CO05 Data Base Management Systems

Programme: B.Tech.

Branch/Specialisation: CSE/IT

Duration: 3 Hrs.**Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. Let E1 and E2 be two entity set in an E-R diagram with simple single-valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-many relationship. R1 and R2 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model? **1**
 (a) 3 (b) 4 (c) 5 (d) 6
- ii. Database is an organized collection of related _____. **1**
 (a) Module (b) Data (c) Programs (d) None of these
- iii. Which of the following is not a DDL command? **1**
 (a) Alter (b) Truncate (c) Update (d) Create
- iv. Consider relation R1 (P, Q, R) and R2 (R, S, T) with primary key P and R respectively. R1 contains 1000 tuples and R2 contains 1500 tuples. The maximum size of join $R1 \bowtie R2$ is _____ tuples. **1**
 (a) 1500 (b) 3000 (c) 2500 (d) 1000
- v. A prime attribute of a relation R is an attribute that appears in _____. **1**
 (a) All candidate key of R (b) Some candidate key of R
 (c) A foreign key of R (d) A primary key of R
- vi. Consider Relation R (A, B, C, D, E) with Functional dependency set $\{A \rightarrow BC, D \rightarrow C, D \rightarrow E\}$. Which of the following is candidate key for relation R? **1**
 (a) AB (b) AD (c) DC (d) DE
- vii. Which of the following is called “all-or-none” property? **1**
 (a) Atomicity (b) Durability (c) Isolation (d) None of these

P.T.O.

- viii. Which of the following database system component ensures the durability property of transaction? **1**
 (a) Concurrency management (b) Transaction Management
 (c) Recovery management (d) Consistency management
- ix. Consider a B+ tree in which the maximum number of keys in a node is 5. What is the minimum number of keys in any non-root node? **1**
 (a) 1 (b) 2 (c) 3 (d) 4
- x. Data _____ refers to the storage of data copies at multiple sites served by a computer network. **1**
 (a) Replication (b) Fragmentation
 (c) Persistence (d) Optimization
- Q.2 i. Explain physical and logical data independence. **2**
 ii. Explain the functions of database Administrator. **3**
 iii. Explain various constraints on binary relationship type. **5**
 OR iv. Describe the steps of mapping an entity relationship model into Relational model. **5**
- Q.3 i. What is “union compatibility”? Explain three basic set operations. **4**
 ii. Explain right, left and full outer join with example. **6**
 OR iii. Explain triggers and cursors with example. **6**
- Q.4 i. Define super key, candidate key, primary key and alternate key. **4**
 ii. What is functional dependency? Discuss Boyce-Codd normal form with example. **6**
 OR iii. Define spurious tuples. Explain lossy and lossless decomposition with example. **6**
- Q.5 i. Explain the ACID properties of transaction. **4**
 ii. What is Schedule? Explain conflict serializability with example. **6**
 OR iii. Explain Recoverable and cascade less schedule with example. **6**
- Q.6 Attempt any two: **5**
 i. Explain B+ tree by taking suitable example. **5**
 ii. Explain spanned and unspanned mapping with example. **5**
 iii. Discuss data fragmentation and replication with example. **5**

Marking Scheme

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Q.1	i.	Let E1 and E2 be two entity set in an E-R diagram with simple single-valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-many relationship. R1 and R2 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model? (a) 3	1	
	ii.	Database is an organized collection of related _____ (b) Data	1	
	iii.	Which of the following is not a DDL command? (c) Update	1	
	iv.	Consider relation R1 (P, Q, R) and R2 (R, S, T) with primary key P and R respectively. R1 contains 1000 tuples and R2 contains 1500 tuples. The maximum size of join $R1 \bowtie R2$ is _____ tuples. (d) 1000	1	
	v.	A prime attribute of a relation R is an attribute that appears in ____ (b) Some candidate key of R	1	
	vi.	Consider Relation R (A, B, C, D, E) with Functional dependency set $\{A \rightarrow BC, D \rightarrow C, D \rightarrow E\}$. Which of the following is candidate key for relation R? (b) AD	1	
	vii.	Which of the following is called “all-or-none” property? (a) Atomicity	1	
	viii.	Which of the following database system component ensures the durability property of transaction? (c) Recovery management	1	
	ix.	Consider a B+ tree in which the maximum number of keys in a node is 5. What is the minimum number of keys in any non-root node? (b) 2	1	
	x.	Data _____ refers to the storage of data copies at multiple sites served by a computer network. (a) Replication	1	
Q.2	i.	Physical Logical data independence.	1 mark 1 mark	2
	ii.	Functions of database Administrator. 0.5 mark for each		3
			(0.5 mark * 6)	

OR	iii.	Constraints on binary relationship type. 1 mark for each constraint	(1 mark * 5)	5
	iv.	Steps of mapping an entity relationship model into Relational model. Explanation with diagram		5
Q.3	i.	Union compatibility Three basic set operations. 1 mark for each operation (1 mark * 3)	1 mark 3 marks	4
	ii.	Explain right, left and full outer join with example. 2 marks for each join with example		6
OR	iii.	Triggers with example Cursors with example.	3 marks 3 marks	6
Q.4	i.	Define super key, candidate key, primary key and alternate key. 1 mark for each key	(1 mark * 4)	4
	ii.	Functional dependency Boyce-Codd normal form Example	1 mark 3 mark 2 marks	6
	iii.	Spurious tuples Lossy decomposition with example Lossless decomposition with example	2 marks 2 marks 2 marks	6
Q.5	i.	ACID properties of transaction 1 mark for property	(1 mark * 4)	4
	ii.	Schedule Conflict serializability Example.	1 mark 3 marks 2 marks	6
	iii.	Recoverable with example Cascade less schedule with example	3 marks 3 marks	6
Q.6		Attempt any two:		
	i.	B+ tree Example.	3 marks 2 marks	5
	ii.	Spanned mapping with example Unspanned mapping with example	2.5 marks 2.5 marks	5
	iii.	Data fragmentation with example Replication with example.	2.5 marks 2.5 marks	5
