Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Science / Engineering

End Sem Examination Dec-2023

CA3CO09 Database Management Systems

Programme: BCA / BCA - MCA (Integrated) Branch/Specialisation: Computer Application

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. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. In which language MYSQL is written? **1**

(a) PYTHON (b) C/C++

(c) JAVA (d) COBOL

ii. Which of the following database was designed first for enterprise? grid computing? **1**

(a) Oracle database (b) SQL

(c) MongoDB (d) Google database

iii. This process of hiding the details of entities in the ER model is known as? **1**

(a) Generalization (b) Specialization

(c) Abstraction (d) Inheritance

iv. How many rules are there for reducing the ER Diagram into a table? **1**

(a) 3 (b) 4 (c) 5 (d) 6

v. Which of the following is a fundamental operation in relational algebra? **1**

(a) Set intersection (b) Natural join

(c) Assignment (d) None of these

vi. Consider following SQL query- **1**

SELECT *FROM student WHERE lastname LIKE '%a';

What does above SQL statement select from the student table?

(a) Selects all students with a lastname starting with "a"

(b) Selects all students with a lastname contains atmost one "a"

(c) Selects all students with a lastname contains no "a"

(d) None of these

P.T.O.

vii. A relation is in this form if it is in BCNF and has no multivalued dependencies- **1**
(a) Second normal form
(b) Third normal form
(c) Fourth normal form
(d) Domain/key normal form

viii. R(A,B,C,D) is a relation, Which of the following does not have a lossless join dependency preserving BCNF decomposition? **1**
(a) A→B, B→CD
(b) A→B, B→C, C→D
(c) AB→C, C→AD
(d) A→BCD

ix. Which of the following is a concurrency control protocol? **1**
(a) Lock Based Concurrency Control Protocol
(b) Timestamp Concurrency Control Protocol
(c) Validation Based Concurrency Control Protocol
(d) All of these

x. Which of the following is not a property of a transaction? **1**
(a) Atomicity (b) Simplicity
(c) Isolation (d) Durability

Q.2 i. Define the following: **2**
(a) Instance
(b) Schema

ii. What is DBA? Mention the functionalities of DBA. **3**

iii. Explain three-schema architecture view of data at three levels with suitable diagram. **5**

OR iv. What do you mean by data model? Explain any two data models in detail. **5**

Q.3 i. What is an attribute? Explain types of attribute. **2**

ii. Discuss in detail about the concepts of E-R model with suitable examples. **8**

OR iii. Explain generalization and specialization with suitable example and diagram. **8**

Q.4 i. Explain the structure of SQL SELECT statement. Write syntax and example. **3**

ii. Create table and write SQL queries statements for following: **7**
Student(Enrno, name, courseId, emailId, Mobileno)
Course(courseId, coursename, duration)
(a) Add a column city in student table
(b) Find out list of students who have enrolled in "computer" course
(c) List name of all courses with their duration
(d) List name of all students start with "a"
(e) List email Id and Mobile no of all mechanical engineering students

OR iii. What do you mean by relational algebra operations? Explain any five relational algebra operation with proper symbol & example. **7**

Q.5 i. What do you mean by functional dependency? Explain the types of functional dependency with an example. **4**

ii. Explain 3NF and BCNF with example. **6**

OR iii. What are the features of good relational database design? Explain various anomalies in normalization. **6**

Q.6 Attempt any two:

i. Explain about ACID properties. **5**

ii. Write short notes on the following: **5**
(a) Serializability (b)Transition states

iii. Explain different types of advanced recovery techniques. **5**

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Marking Scheme
Database Management Systems (T) - CA3CO09 (T)

Q.1	i)	b) C/C++		**1**
	ii)	a) Oracle database		**1**
	iii)	c) abstraction		**1**
	iv)	d) 6		**1**
	v)	d) None of the mentioned		**1**
	vi)	b) Selects all students with a lastname contains atmost one "a".		**1**
	vii)	c) fourth normal form.		**1**
	viii)	a) A→B, B→CD		**1**
	ix)	d) All of the above		**1**
	x)	b) Simplicity		**1**
Q.2	i.	a) Instance	1 Mark	**2**
		b) Schema	1 Mark	
	ii.	DBA	1 Mark	**3**
		The functionalities of DBA.	2 Marks	
	iii.	Three levels view diagram.	2 Marks	**5**
		Explanation of each level.	3 Marks	
OR	iv.	Data model	1 Mark	**5**
		Two data models in detail.	(2 Marks*2)	
Q.3	i.	What is an attribute	1 Mark	**2**
		Explain types of attribute.	1 Mark	
	ii.	Concept of E-R model.	2 Marks	**8**
		Explanation of E-R model	3 Marks	
		Example of E-R model.	3 Marks	
OR	iii.	Explain Generalization, example, diagram	4 Marks	**8**
		Specialization, example, diagram.	4 Marks	
Q.4	i.	Explain the structure of SQL	1 Mark	**3**
		Write syntax and example.	2 Marks	
	ii.	Student(Enrno, name, coursed.	1 Mark	**7**
		Course(courseId, coursename, duration)	1 Mark	
		Five Queries statement	(1 Mark*5)	
OR	iii.	Relational algebra operations	2 Marks	**7**
		Explain any five relational	(1 Mark*5)	
Q.5	i.	Functional dependency	2 Marks	**4**

		Types of functional dependency with an example	2 Marks	
	ii.	3NF with example.	3 Marks	**6**
		BCNF with example	3 Marks	
OR	iii.	Features of good relational database design	2 Marks	**6**
		Explain various anomalies in normalization?	4 Marks	
Q.6				
	i.	Acid properties	(As per explanation)	**5**
	ii.	a) Serializability	2.5 Marks	**5**
		b)Transition states	2.5 Marks	
	iii.	Different types of Advanced	(As per explanation)	**5**

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