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

Enrollment No.....

Faculty of Engineering

End Sem (Even) Examination May-2019

CA5CO07 Database Management Systems

Programme: MCA 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.

Q.1 i. The term _____ is used to refer to a row. **1**

(a) Attribute (b) Tuple (c) Field (d) Instance

ii. Database _____ which is the logical design of the database, and the database _____ which is a snapshot of the data in the database at a given instant in time. **1**

(a) Instance, Schema (b) Relation, Schema

(c) Relation, Domain (d) Schema, Instance

iii. Which one of the following is used to define the structure of the relation, deleting relations and relating schemas? **1**

(a) DML (Data Manipulation Language)

(b) DDL (Data Definition Language)

(c) Query

(d) Relational Schema

iv. An entity set that does not have sufficient attributes to form a primary key is termed a _____ **1**

(a) Strong entity set (b) Variant set

(c) Weak entity set (d) Variable set

v. Which of the following is not Armstrong's Axiom? **1**

(a) Reflexivity rule (b) Transitivity rule

(c) Pseudo transitivity rule (d) Augmentation rule

vi. The relation employee (ID, name, street, Credit, street, city, salary) is decomposed into **1**

employee1 (ID, name)

employee2 (name, street, city, salary)

P.T.O.

This type of decomposition is called
(a) Lossless decomposition (b) Lossless-join decomposition
(c) All of these (d) None of these

vii. To remove a relation from an SQL database, we use the _____ command. **1**
(a) Delete (b) Purge (c) Remove (d) Drop table

viii. Updates that violate _____ are disallowed. **1**
(a) Integrity constraints (b) Transaction control
(c) Authorization (d) DDL constraints

ix. A file is organized so that the ordering of data records is the same as or closes to the ordering of data entries in some index. Then that index is called **1**
(a) Dense (b) Sparse (c) Clustered (d) Un-clustered

x. The file organization that provides very fast access to any arbitrary record of a file is **1**
(a) Ordered File (b) Unordered File
(c) Hashed File (d) B-tree

Q.2 i. Discuss the main characteristics of the database approach. **2**

ii. What is the difference between a database schema and a database state? **3**

iii. What is the difference between logical data independence and physical data independence? Which one is harder to achieve? Why? **5**

OR iv. Define the following terms: Data Model, Meta Data, Internal Schema, Conceptual Schema and Data Independence. **5**

Q.3 i. What is an entity type? What is an entity set? Explain the difference among an entity, an entity type and an entity set. **2**

ii. A bank has many branches and a large number of customers. A customer can open different kinds of accounts with the bank. The bank keeps track of a customer by his SSN, name, address and phone number. Age is used as a factor to check whether he is a major. There are three types of loans, each identified by a loan number. A customer can take out more than one type of loan and all branches can give loans. Loans have a duration and interest rate. The account holder can enquire about the balance in his account. **8**

Draw an ER Diagram for the bank. Make suitable assumptions and use them in showing maximum and minimum cardinality ratios.

OR iii. Define foreign key. What is this concept used for? **8**
How are the OUTER JOIN operations different from the INNER JOIN operations? How is the OUTER UNION operation different from UNION?

Q.4 i. What is the purpose of Normalization? Describe with suitable example. **3**

ii. What is Multi-Valued Dependency? Explain Fifth Normal Form with suitable example. **7**

OR iii. Describe the characteristics of table that is not in normalized form. Describe how such a table is converted to first normal form relation. **7**

Q.5 i. Explain ACID properties of transactions. **4**

ii. Discuss the problem of deadlock and starvation, and the different approached to dealing with these problems. **6**

OR iii. How is the concept of serializability useful for concurrency control? **6**

Q.6 Write short note on any two:

i. RAID **5**

ii. Data Warehousing and Data Mining **5**

iii. Multimedia Database **5**

******

Marking Scheme
CA5CO07 Database Management Systems

Q.1	i.	The term _____ is used to refer to a row. (b) Tuple		**1**
	ii.	Database _____ which is the logical design of the database, and the database _____ which is a snapshot of the data in the database at a given instant in time. (d) Schema, Instance		**1**
	iii.	Which one of the following is used to define the structure of the relation, deleting relations and relating schemas? (b) DDL (Data Definition Language)		**1**
	iv.	An entity set that does not have sufficient attributes to form a primary key is termed a _____ (c) Weak entity set		**1**
	v.	Which of the following is not Armstrong's Axiom? (c) Pseudo transitivity rule		**1**
	vi.	The relation employee (ID, name, street, Credit, street, city, salary) is decomposed into employee1 (ID, name) employee2 (name, street, city, salary) This type of decomposition is called (d) None of these		**1**
	vii.	To remove a relation from an SQL database, we use the _____ command. (d) Drop table		**1**
	viii.	Updates that violate _____ are disallowed. (a) Integrity constraints		**1**
	ix.	A file is organized so that the ordering of data records is the same as or closes to the ordering of data entries in some index. Then that index is called (b) Sparse		**1**
	x.	The file organization that provides very fast access to any arbitrary record of a file is (c) Hashed File		**1**
Q.2	i.	Main characteristics of the database approach. 1 mark for each	(1 mark * 2)	**2**
	ii.	Database schema Database state	1.5 marks 1.5 marks	**3**
	iii.	Difference between logical data independence and physical data independence Which one is harder to achieve Reason	3 marks 1 mark 1 mark	**5**
OR	iv.	Define the following terms: Data Model, Meta Data Internal Schema Conceptual Schema Data Independence.	 1 mark 1 mark 1 mark 1 mark 1 mark	**5**
Q.3	i.	Entity type and entity set Difference among an entity, an entity type and an entity set	1 mark 1 mark	**2**
	ii.	Identity Entries Identity attributes Identity relationship Identity Cardinality Ratios Diagram	2 marks 2 marks 2 marks 1 mark 1 mark	**8**
OR	iii.	Define foreign key Utilization of the concept of Foreign key Difference b/w Outer join and inner Join Difference b/w Outer Join and Union	1 mark 1 mark 3 marks 3 marks	**8**
Q.4	i.	Purpose of Normalization Example	1.5 marks 1.5 marks	**3**
	ii.	Multi-Valued Dependency Fifth Normal Form Example	2 marks 3 marks 2 marks	**7**
OR	iii.	Characteristics of table that is not in NF How table is converted in NF	3 marks 4 marks	**7**
Q.5	i.	ACID properties of transactions. 1 mark for each properties	 (1 mark * 4)	**4**
	ii.	Problem of deadlock Problem of starvation Approached to solve the problems	2 marks 2 marks 2 marks	**6**
OR	iii.	Concept of serializability How useful for concurrency control	2 marks 4 marks	**6**

Q.6		Write short note on any two:		
	i.	RAID		**5**
		Background	1 mark	
		Level of RAID	4 marks	
	ii.	Data Warehousing	2.5 marks	**5**
		Data Mining	2.5 marks	
	iii.	Multimedia Database		**5**
		Background	1 mark	
		Characteristic of multimedia database	2 marks	
		Challenges of Multimedia database	2 marks	

******