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

Enrollment No.....

Faculty of Science

End Sem (Even) Examination May-2022

BC3CO13 Database Management Systems

Programme: B.Sc. (CS) Branch/Specialisation: Computer Science

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 database environment has all of the following components except: **1**

(a) Users (b) Separate files

(c) Database (d) Database administrator

ii. The property / properties of a database is / are: **1**

(a) It is an integrated collection of logically related records.

(b) It consolidates separate files into a common pool of data records.

(c) Data stored in a database is independent of the application programs using it.

(d) All of these.

iii. E-R model uses this symbol to represent weak entity set: **1**

(a) Dotted rectangle (b) Diamond

(c) Doubly outlined rectangle (d) None of these

iv. Key to represent relationship between tables is called **1**

(a) Primary key (b) Secondary Key

(c) Foreign Key (d) None of these

v. Relational Algebra is **1**

(a) Data Definition Language

(b) Meta Language

(c) Procedural query Language

(d) None of these

vi. What is a relationship called when it is maintained between two entities? **1**

(a) Unary (b) Binary (c) Ternary (d) Quaternary

P.T.O.

vii. A relation empdt1 is defined with attributes: **1**
empdt1(empcode, name, street, city, state,pincode).
For any pincode, there is only one city and state. Also, for given street, city and state, there is just one pincode. In normalization terms, empdt1 is a relation in
(a) 1 NF only
(b) 2 NF and hence also in 1 NF
(c) 3NF and hence also in 2NF and 1NF
(d) BCNF and hence also in 3NF, 2NF and 1NF

viii. In a schema with attributes A, B, C, D and E following set of functional dependencies are given **1**
A --> B
A -->C
CD —>E
B --> D
E —> A
Which of the following functional dependencies is the implied by the above set?
(a) CD —> AC (b) BD --> CD
(c) BC —> CD (d) AC —> BC

ix. Transaction processing is associated with everything below except **1**
(a) Producing detail, summary, or exception reports
(b) Recording a business activity
(c) Confirming an action or triggering a response
(d) Maintaining data

x. Which of the following locks the item from change but not from read? **1**
(a) Implicit lock (b) Explicit lock
(c) Exclusive lock (d) Shared lock

Q.2 i. Define the DDL and DML operation using one example each. **2**
ii. Explain database schema. What do you understand by data abstraction? **3**
iii. Explain and discuss the DBMS system architecture. **5**
OR iv. Discuss any data model with example. **5**

Q.3 i. How you differentiate between aggregation, generalization and specialization? **4**
ii. Create an E-R diagram for the university enrolment system. **6**
OR iii. Differentiate between strong and weak entity types. What is composite key? **6**

Q.4 i. What is superkey, foreign key and parent child relationship? **3**
ii. Discuss natural join operation using relational algebra and equivalent SQL statement, explain using example. **7**
OR iii. What are aggregate functions and operations in SQL? **7**

Q.5 i. Give description about normalization. **4**
ii. With suitable example and analogy explain characteristics of functional dependency. Also write about data redundancy and update anomalies. **6**
OR iii. Differentiate between 3NF and BCNF normal forms. **6**

Q.6 Attempt any two:
i. What are ACID properties in DBMS? Explain in brief. **5**
ii. Explain deadlock, transaction states and serializability. **5**
iii. What do you understand by atomicity, log-based recovery and checkpoints? **5**

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Marking Scheme

BC3CO13 Database Management Systems

Q.1	i.	(b) Separate files		**1**
	ii.	(a) All of these.		**1**
	iii.	(c) Doubly outlined rectangle		**1**
	iv.	(c) Foreign Key		**1**
	v.	(c) Procedural query Language		**1**
	vi.	(b) Binary		**1**
	vii.	(b) 2 NF and hence also in 1 NF		**1**
	viii.	(a) CD —> AC (c) BC —> CD	(d) AC —> BC	**1**
	ix.	(a) Producing detail, summary, or exception reports		**1**
	x.	(d) Shared lock		**1**
Q.2	i.	DDL	1 Mark	**2**
		DML	1 Mark	
	ii.	Schema	1 Mark	**3**
		Abstraction	2 Marks	
	iii.	Structure diagram	3 Marks	**5**
		Define	2 Marks	
OR	iv.	Define data model	2 Marks	**5**
		Types and explanation	3 Marks	
Q.3	i.	Comparison at least 2 parameters	2 Marks each (2 Marks*2)	**4**
	ii.	All entities	2 Marks	**6**
		All relationship	2 Marks	
		Connections	2 Marks	
OR	iii.	Strong and weak entity	3 Marks	**6**
		Composite key	3 Marks	
Q.4	i.	Superkey	1 Mark	**3**
		Foreign key	1 Mark	
		Parent child relationship	1 Mark	
	ii.	Natural join	3 Marks	**7**
		Equivalent SQL	4 Marks	
OR	iii.	Aggregate functions	3 Marks	**7**
		Operations in SQL	4 Marks	
Q.5	i.	Definition	2 Marks	**4**
		Forms	2 Marks	
	ii.	Functional dependency	3 Marks	**6**
		Data redundancy	3 Marks	
OR	iii.	Difference at least 3 parameters	2 Mark each (2 Marks*3)	**6**
Q.6		Attempt any two:		
	i.	ACID properties	5 Marks	**5**
	ii.	Deadlock	2 Marks	**5**
		Transaction states	2 Marks	
		Serializability.	1 Mark	
	iii.	Atomicity	2 Marks	**5**
		Log-based recovery	2 Marks	
		Checkpoints	1 Mark	

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