Total	No.	of Questions : 8] SEAT No. :			
P-75	537	[Total No. of Pages : 2			
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T.E	Z. (C	Computer Engg./Artificial Intelligence & Data Science)			
		DATABASE MANAGEMENT SYSTEM			
		(2019 Pattern) (Semester - I) (310241)			
Time	: 21/2	[Max. Marks: 70			
Instructions to the candidates:					
	1)	Answer Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6, Q.7 or Q.8.			
	<i>2</i>)	Neat diagrams must be drawn wherever necessary.			
	<i>3</i>)	Figures to the right indicate full marks.			
	4)	Assume suitable data, if necessary.			
<i>Q1</i>)	a) \	What is anomaly in relational model. Explain how normalization can			
		be used to reduce the anomalies. [9]			
	b)	Explain 2NF and 3NF and BCNF with example. [9]			
		OR			
<i>Q</i> 2)	a)	What are relational integrity constraints. Explain with example Domain constraints, Referential-Integrity and enterprise constraints. [9]			
	b)	Elaborate the significance of codd's rule. Explain 12 rules proposed			
	U)	by codd's. [9]			
<i>Q3</i>)	a)	Explain the concept of conflict serializability with suitable example.			

Q3) a) Explain the concept of conflict serializability with suitable example. Since every conflict-serializable schedule is view serializable, why do we emphasize conflict serializability rather than view serializability?

Explain the two-phase lock protocol for concurrency control. Also explain its two versions: strict two-phase lock protocol and rigorous two-phase lock protocol.

[8]

OR

[9]

Q4)	a)	What is R-timestamp(Q) and W-timestamp(Q) Explain the necessar	y
		condition used by time stamp ordering protocol to execute for a read write operation.	l / 3]
	b)	To ensure atomicity despite failures we use Recovery Methods Explai	
	- /	in detail following Log-Based Recovery methods with example. [9]	
		i) Deferred Database Modifications	
		ii) Immediate Database Modifications	
<i>Q5</i>)	a)	Compare SQL and NOSQL Database.	5]
	b)	Explain BASE Properties of NOSQL Database. [6]	6]
	c)	Explain Document Based and Key value data model of NOSQ	
			6]
		OR OR	~ 3
<i>Q6</i>)	a)	Explain the CRUD operations used in MongoDB with example. [6	-
	b) \	State and Explain CAP Theorem [6	5]
	c)	Explain Map Reduce with example.	5]
0 -)			2.7
<i>Q7</i>)	a)		3]
	b)	What is the significance of XML databases? Explain with proper example when to use XML database.	er 9
		OR S	ز
Q8)	a)	Write a short note on complex data types:	3]
		i) Semi-structured data	
		ii) Features of semi-structured data models	
	b)	What is object relational database system. Explain Table inheritance	e
	<	with example.	•]]
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