R18

Code No.: 18CSC13

CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (Autonomous)

B.E. (CSE) IV Sem (Main & Backlog) Examination June 2021

Database Management Systems

Time: 3 Hours **Max Marks: 70**

Note: Answer all questions from **Part- A** and**Part – B** at one place in the same order.

Part – A (20 Marks)

		M	CO	BT
1	Define instance and schema?	(2)	1	1
2	Define the Data Model? What are different data models?	(2)	2	1
3	What is DML? List DML operations.	(2)	2	1
4	Define View? List advantages of views?	(2)	2	1
5	What is functional dependency?	(2)	3	1
6	Explain multilevel indices?	(2)	5	2
7	Explain shared lock and exclusive lock.	(2)	4	2
8	What is atomicity of a transaction?	(2)	4	1
9	Explain difference between Logical Error and System Error.	(2)	5	2
10	Explain write-ahead logging (WAL) rule.	(2)	5	2

Part – B (50 Marks)

			M	CO	BT
11	(a)	Identify and Explain four significant differences between a file-processing system and a DBMS.	(6)	1	4
	(b)	Who are the different database users? Explain their interfaces to database management system.	(4)	1	2
		(OR)			
12	(a)	Define Entity? List and explain the symbols used to draw ER Diagram.	(5)	2	2
	(b)	Define the following terms and give examples: (i) cardinality (ii) unary relationships (iii) specialization	(5)	2	1
13	(a)	Express the following SQL operations in **Relational Algebra** with suitable examples. i) SELECT ii) Projection iii) Rename iv) Union operation v) Set Difference	(5)	2	3
	(b)	Illustrate the implementation of equi-join and outer joins in SQL.	(5)	2	2
		(OR)			
14	(a)	Consider the student database as given below and Write **SQL statements** for the following: **Student**(Enrno, name, courseId, emailId, cellno) **Course**(courseId, course_nm, duration)	(5)	2	3

i) Add a column city in student table.
ii) Find out list of students who have enrolled in "computer" course.
iii) List name of all students start with "a".

	(b)	Explain the following clauses with examples (i) HAVING (ii) GROUP BY iii) ORDER BY	(5)	2	2
15	(a)	Write the steps of the algorithm to find closure of an attribute based on a given set of FDs? Consider a relation R (A, B, C, D, E, F, G) with the functional dependencies- A → BC, BC → DE,D → F,CF → G and find out attribute A Closure.	(6)	3	3
	(b)	Differentiate between second normal form and Third normal form.	(4)	3	2
		(OR)			
16	(a)	What is an index on a file of records? Explain insertion and deletion operations on sparse indexes.	(6)	5	2
	(b)	Consider the relation R(A,B,C) having the following functional dependencies A → B,B → C. If Relation R is decomposed in to R1(A,C) and R2(B,C). Explain does this decomposition preserve the given dependencies.	(4)	3	4
17	(a)	Explain the differences between closed and open hashing. Discuss the merits of each technique.	(5)	5	4
	(b)	List all possible sequences of states through which a transaction may pass during its execution? Explain why each state transition may occur.	(5)	4	2
		(OR)			
18	(a)	Explain how the time stamp based protocol it is used for concurrency control?	(6)	4	2
	(b)	Consider the following concurrent schedule S consisting of T0 and T1. Is this schedule conflict serializable? Justify	(4)	4	4

Schedule S	
T0	T1
read(A)	
read(B)	
	read(B)
	read(A)
If A=0 then B:=B+1;	
Write(B)	
	If B=0 then A:=A+1;
	Write(A)

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19	(a)	What is Deadlock? Explain dead lock prevention techniques in detail.	(6)	4	2
	(b)	Explain fuzzy check point and what are advantages?	(4)	5	2
		(OR)			
20	(a)	Explain how ARIES recovers from a system crash in three passes.	(6)	5	2
	(b)	Outline the drawbacks of the no-steal and force buffer management policies.	(4)	5	2

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