CLASS: BTECH   SEMESTER : V
BRANCH: CSE/ IT   SESSION : MO/2022

SUBJECT: CS301 DATABASE MANAGEMENT SYSTEM

TIME: 03 Hours   FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

----

Q.1(a)	Define DBMS? Why do we need DBMS?	[2]
Q.1(b)	What are different Database Languages? Explain.	[3]
Q.1(c)	With the help of a diagram elaborate the Database system structure.	[5]

Q.2(a)	Explain Codd's Rule.	[2]
Q.2(b)	What are different Components of E-R Diagram? Elaborate them.	[3]
Q.2(c)	Construct an E-R diagram for a car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. Each insurance policy covers one or more cars and has one or more premium payments associated with it. Each payment is for a particular period, and has an associated due date, and the date when the payment was received.	**[5]**

Q.3(a)	Explain Selection and Projection operations in relational algebra with examples.	[2]
Q.3(b)	Differentiate between 3NF and BCNF.	[3]
Q.3(c)	Elaborate the following with examples: i) Joins , ii) Triggers	[2+3]

Q.4(a)	Explain Hashing.	[2]
Q.4(b)	Differentiate between B tree and B+ tree with example.	[3]
Q.4(c)	Consider a Hard Disk with block size = 1000 Bytes, each record is of size 250 Bytes. If total number of records are 10000 and data entered in the Hard Disk in any order (Unordered / ordered), what is the average time complexity to search a record (i) from a Hard disk. (ii) from index table (Dense and Sparse) , if index table entry is 20 Bytes [10 Bytes (Key) + 10 Bytes (Pointer]	[5]

Q.5(a)	What is ACID properties? Explain.	[2]
Q.5(b)	A. What is transaction in RDBMS? Describe the transaction states in RDBMS and properties of transaction in RDBMS.	[3]
Q.5(c)	What is Deadlock? Elaborate with example.	[5]

:::::21/11/2022 M:::::