Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

V SEMESTER B.TECH. (MECHATRONICS ENGINEERING)

MAKE-UP EXAMINATIONS, DEC 2019

SUBJECT: DATABASE MANAGEMENT SYSTEMS [MTE 4011]

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** questions.
- Data not provided may be suitably assumed

		Marks	CO
1A.	Elaborate on the ACID properties of transactions with suitable examples.	**4**	**CO4**
1B.	For the set of transactions shown in Table 1B, find the most frequent item set with a minimum support of 3 using the FP Growth algorithm. **Table 1 B** **Transactions** / **Item sets** 1 — Fries, Apples, Coconuts, Dates, Guavas, Mangoes, Pineapples 2 — Apples, Bananas, Coconuts, Fries, Lychees, Mangoes, Oranges 3 — Bananas, Fries, Hotdogs, Oranges 4 — Bananas, Kitkats, Coconuts, Pineapples 5 — Apples, Fries, Coconuts, Lychees, Pineapples, Mangoes, Nuts	**6**	**CO5**
2A.	Create the Decision tree using the parameter of Information gain for the data in Table 2A. **Table 2A** **Outlook** / **Temperature** / **Humidity** / **Windy** / **Class** Sunny / Hot / High / False / N Sunny / Hot / High / True / N Overcast / Hot / High / False / P Rain / Mild / High / False / P Rain / Cool / Normal / False / P Rain / Cool / Normal / True / N Overcast / Cool / Normal / True / P Sunny / Mild / High / False / N	**6**	**CO5**
2B.	For the two relations shown in Tables 2B.1 and 2B.2, compute the output of the following operations using Relational Algebra. i. $R \bigcup S$ ii. $R \bigcap S$	**4**	**CO2**

Table 2B.1: Relation R

A	B
λ	1
λ	2
σ	1

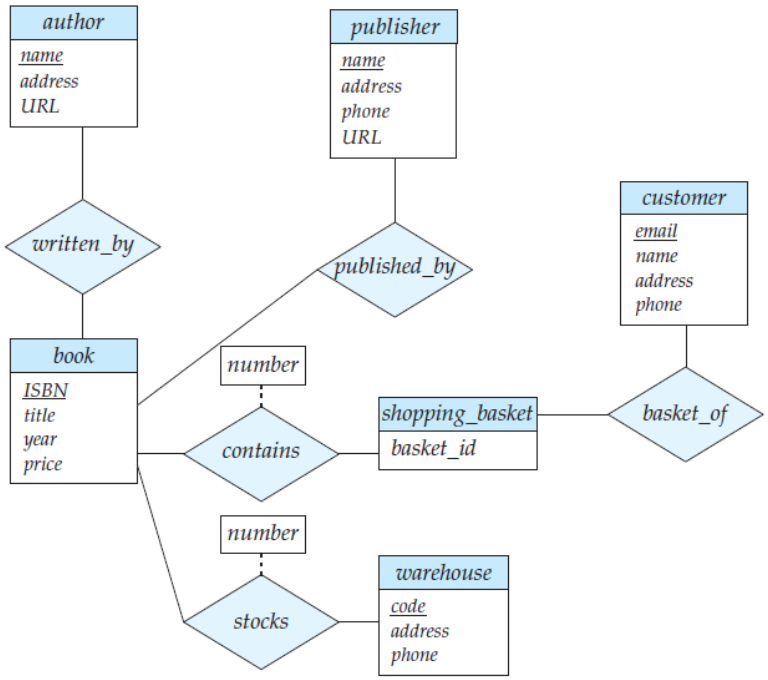
Table 2B.2: Relation S

A	B
λ	2
σ	3

3A.	i. Break down the table shown in Table 3 A into Second Normal form ii. Differentiate between Third Normal form and Boyce Codd Normal Form.	**6**	**CO2**
3B.	Cite an example of a serializable schedule with two transactions such that the order in which the transactions commit is different from the serialization order.	**4**	**CO1**
4A.	Define Weak Entity set. Describe by using suitable illustrations.	**3**	**CO3**
4B.	Draw an ER diagram for the following process: Customers visit the Centage website to purchase gardening items. Customers may or may not place orders at any one time. Each order is assigned a unique order code and an order may have multiple items. One order can have multiple transactions since customers may add items, change the quantity of items or even return items after purchase, if they so desire. Relevant customer information includes name, address and telephone number.	**7**	**CO3**
5A.	Observe the database structure shown in Figure 5A and write SQL queries for the following: i. List all the suppliers in alphabetical order. ii. List the number of customers in each country. Only include countries with 10 or more customers. iii. List the customers in Sweden. iv. Get details of the customer named 'Thomas Cook'. v. List all the products with names that start with 'Ca'.	**5**	**CO3**

Table 3A

Customer ID	Store ID	Purchase Location
1	1	Los Angeles
1	3	San Francisco
2	1	Los Angeles
3	2	New York
4	3	San Francisco

	 **Figure 5A**		
5B.	Elaborate on three commands used in SQL for the modification of the database. Use appropriate examples to support your answer.	**5**	**CO3**