Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

V SEMESTER B.TECH. (MECHATRONICS ENGINEERING)

MAKE-UP EXAMINATIONS, DEC'17-JAN'18

SUBJECT: DATABASE MANAGEMENT SYSTEMS [MTE 4011]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A.	Describe the concept of the Database engine in brief with suitable illustrations.	**04**
1B.	With the aid of a table differentiate between Super key, Candidate key and Primary key.	**06**
2A.	What would be the output of the following query? select distinct *A.name* **from** *instructor* **as** *A, instructor* **as** *B* **where** *A.salary* > *B.salary* **and** *B.dept name* = 'Mechatronics'; Suggest an alternate way of writing the query using the **'> some'** clause.	**04**
2B.	Use the K-medoids clustering algorithm to cluster the data containing objects (from 1 to 10) as shown in Figure 2 B. Each object consists of two attributes A1 and A2.	**06**
3A.	For the two relations shown in Figure 3 A, compute the output of the following operations using Relational Algebra. i. $R \bigcup S$ ii. $R \bigcap S$ iii. $R - S$	**03**
3B.	For the set of transactions shown in Figure 3B, find the most frequent item set with a minimum support of 3 using the FP Growth algorithm.	**07**
4A.	List and explain the various drawbacks of File systems which have been overcome by Database management systems.	**04**
4B.	For the set of transactions shown in Figure 4 B, find the set of items which are most likely to be purchased together.	**06**
5A.	Convert the two tables (Book details and Employee details) shown in Figure 5 A into Third normal form	**04**
5B.	Create the Decision tree for the data shown in Figure 5B.	**06**

Object number	Attribute 1	Attribute 2
1	2	6
2	3	4
3	3	8
4	4	7
5	6	2
6	6	4
7	7	3
8	7	4
9	8	5
10	7	6

Figure 2B

Relation R

A	B
λ	1
λ	2
σ	1

Relation S

A	B
λ	2
σ	3

Figure 3A

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

Figure 3B

Customer	Items
1	Oranges, Shine cleaner
2	Mangoes, Oranges, Bananans
3	Oranges, Dates
4	Oranges, Dates, Shine cleaner
5	Bananas, Shine Cleaner

Figure 4 B

Table Book Details

Book ID	Genre ID	Genre Type	Price
1	1	Religious	900
2	2	Origami	250
3	1	Religious	500
4	3	Computer Science	1000
5	2	Origami	300

Table Employee Details

Emp_id	Emp_name	Emp_zip	Emp_state	Emp_city	Emp_district
1	Matthew	100 001	UP	Agra	Dayal Bagh
2	Mark	200 002	TN	Chennai	M-City
3	Luke	300 003	AP	Hyderabad	Lal Bagh
4	John	100 001	UP	Agra	Dayal Bagh
5	Philip	400 004	MP	Gwalior	Ratan

Figure 5 A

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

Figure 5 B