

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019**

**Course Code: CS402**

**Course Name: DATA MINING AND WAREHOUSING**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 4 marks.*

Marks

- |    |   |     |
|----|---|-----|
| 1  | How is data mining related to business intelligence?  | (4) |
| 2  | Differentiate between OLTP and OLAP.  | (4) |
| 3  | Why do we need data transformation? What are the different ways of data transformation?   | (4) |
| 4  | An airport security screening station wants to determine if passengers are criminals or not. To do this, the faces of passengers are scanned and kept in a database. Is this a classification or prediction task? Justify | (4) |
| 5  | Where do we use Linear regression? Explain linear regression.   | (4) |
| 6  | What is the significance of tree pruning in decision tree algorithms?   | (4) |
| 7  | What are the two measures used for rule interestingness?  | (4) |
| 8  | Given two objects represented by the tuples (22,1,42,10) and (20,0,36,8) Compute the Manhattan distance between the two objects.  | (4) |
| 9  | How density based clustering varies from other methods?   | (4) |
| 10 | Differentiate web content mining and web structure mining.  | (4) |

**PART B**

*Answer any two full questions, each carries 9 marks.*

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|----|--|-----|
| 11 | a) Explain various stages in knowledge discovery process with neat diagram   | (5) |
|    | b) Use the two methods below to normalize the following group of data:<br>1000,2000,3000,5000,9000<br>i) min-max normalization by setting min=0 and max=1<br>ii) z-score normalization   | (4) |
| 12 | Suppose that a data warehouse for University consists of four dimensions date, spectator, location and game and two measures count and charge, where charge is the fare that a spectator pays when watching a game on the given date. Spectator may be students , adults or seniors ,with each category having its own charge rate |     |

- a) Draw a star scheme for the data warehouse. (6)
- b) Starting with the basic cuboid [date,spectator,location,game] ,what specific OLAP operation should be performed in order to list the total charge paid by student spectators at GM\_PLACE in 2010. (3)
- 13 Summarize the various pre-processing activities involved in data mining (9)

### PART C

*Answer any two full questions, each carries 9 marks.*

- 14 Based on the following data determine the gender of a person having height 6 ft., weight 130 lbs. and foot size 8 in. (use Naive Bayes algorithm). (9)

person	height (feet)	weight (lbs)	foot size (inches)
male	6.00	180	10
male	6.00	180	10
male	5.50	170	8
male	6.00	170	10
female	5.00	130	8
female	5.50	150	6
female	5.00	130	6
female	6.00	150	8

- 15 (9)

The “Restaurant A” sells burger with optional flavours: Pepper, Ginger and Chilly. Every day this week you have tried a burger (A to E) and kept a record of which you liked. Using Hamming distance, show how the 3NN classifier with majority voting would classify  
 {pepper = false, ginger =true, chilly = true}

	Pepper	Ginger	Chilly	liked
A	true	true	true	false
B	true	false	flase	true
C	false	true	true	false
D	false	true	false	true
E	true	false	false	true

- 16 a) How C4.5 differs from ID3 algorithm? (3)
- b) How does backpropagation algorithm works? (6)

### PART D

*Answer any two full questions, each carries 12 marks.*

- 17 Consider the transaction database given below. Set minimum support count as 2 and minimum confidence threshold as 70%

Transaction ID	List of Item_Ids
T100	I1,I2,I5
T200	I2,I4
T300	I2,I3
T400	I1,I2,I4
T500	I1,I3
T600	I2,I3
T700	I1,I3
T800	I1,I2,I3,I5
T900	I1,I2,I3

- a) Find the frequent itemset using FP Growth Algorithm. (8)
- b) Generate strong association rules. (4)
- 18 a) Explain BIRCH Clustering Method. (8)
- b) What are the advantages of BIRCH compared to other clustering method. (4)
- 19 a) Explain k-means partition algorithm. What is the drawback of K-means? (6)
- b) Term frequency matrix given in the table shows the frequency of terms per document. Calculate the TF-IDF value for the term T4 in document 3. (6)

Document/term	T1	T2	T3	T4	T5	T6
D1	5	9	4	0	5	6
D2	0	8	5	3	10	8
D3	3	5	6	6	5	0
D4	4	6	7	8	4	4

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