Seat No: _____ **Enrollment No:** _____

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

M.Tech. Summer 2018 - 19 Examination

Semester: 2 **Date: 10/05/2019**

Subject Code: 203202180 **Time: 10:30am To 01:00pm**

Subject Name: Program Elective-3 - Data Preparation and Analysis **Total Marks: 60**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 A) What is Data Analysis? Describe Necessary Steps for Data Analysis. **(05)**

B) Explain Data Segmentation with example. **(05)**

C) How to Handle Missing Data and Duplicate Data During Data Analysis? **(05)**

Q.2 Answer the following questions. (Attempt any three) (Each five mark) **(15)**

A) Write Short-Note on Data Visualization.

B) A candidate rule has been extracted using the associative rule method from following Table:

If Exhaustion = None AND
Stuffy node = Severe
THEN Diagnosis = cold

Patient id	Fever	Head-aches	General aches	Weak-ness	Exha-ustion	Stuffy nose	Sneezing	Sore throat	Chest disco-mfort	Diagn-osis
1326	None	Mild	None	None	None	Mild	Severe	Severe	Mild	Cold
398	Severe	Severe	Severe	Severe	Severe	None	None	Severe	Severe	Flu
6377	Severe	Severe	Mild	Severe	Severe	Severe	None	Severe	Severe	Flu
1234	None	None	None	Mild	None	Severe	None	Mild	Mild	Cold
2662	Severe	Severe	Mild	Severe	Severe	Severe	None	Severe	Severe	Flu
9477	None	None	None	Mild	None	Severe	Severe	Severe	None	Cold
7286	Severe	Severe	Severe	Severe	Severe	None	None	None	Severe	Flu
1732	None	None	None	None	None	Severe	Severe	None	Mild	Cold
1082	None	Mild	Mild	None	None	Severe	Severe	Severe	Severe	Cold
1429	Severe	Severe	Severe	Mild	Mild	None	Severe	None	Severe	Flu
14455	None	None	None	Mild	None	Severe	Mild	Severe	None	Cold
524	Severe	Mild	Severe	Mild	Severe	None	Severe	None	Mild	Flu
1542	None	None	Mild	Mild	None	Severe	Severe	Severe	None	Cold
8775	Severe	Severe	Severe	Severe	Mild	None	Severe	Severe	Severe	Flu
1615	Mild	None	None	Mild	None	Severe	None	Severe	Mild	Cold
1132	None	None	None	None	None	Severe	Severe	Severe	Severe	Cold
4522	Severe	Mild	Severe	Mild	Mild	None	None	None	Severe	Flu

Calculate the support, Confidence, and Lift for this rule.

C) Define Mean, Median and Quartiles with example.

D) What is Confidence Interval? How to Measure Confidence Interval for Data Analysis?

Q.3 A) Explain Different Scales of Measurement with example. **(07)**

B) Explain Different Data Transformation Techniques. **(08)**

OR

B) Describe different Hypothesis Assessment method with example. **(08)**

Q.4 A) A company that produces tomato plant fertilizer wishes to make a claim that their fertilizer (X) results in taller tomato plants than a competitor product (Y). Under highly controlled conditions, 50 plants were grown using X and 50 plants grown using Y and the height of the plants were measured. The average height of the plants grown with fertilizer X is 0.36 meters with a standard deviation of 0.035. The average height of the plants grown with fertilizer Y was 0.34 with a standard deviation of 0.036. Using a 95% confidence limit: **(07)**

a. Specify the null and alternative hypothesis
b. Calculate the hypothesis score
c. Calculate a p-value
d. Determine whether the company can make the claim

OR

A) A producer of kettles wishes to assess whether a new supplier of steel (B) results in kettles with fewer defects than the existing supplier (A). To test this, the company collects a number of kettles generated from both suppliers to examine the kettles for defects. Following Table summarizes the counts. Using a 95% confidence limit: **(07)**

	Defective	Not defective	
Manufacturer A	7	98	105
Manufacturer B	5	97	102
Totals	12	195	207

a. Specify the null and alternative hypothesis
b. Calculate the hypothesis score
c. Calculate a p-value
d. Determine whether the company can make the claim

B) Describe Clustering using Hierarchical method. **(08)**

Table: 1

Confidence Level	Critical Value (Z-score)
0.90	1.645
0.91	1.70
0.92	1.75
0.93	1.81
0.94	1.88
0.95	1.96
0.96	2.05
0.97	2.17
0.98	2.33
0.99	2.575

Table:2

Z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9924	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9958	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986