Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA(PART TIME) – SEMESTER 1 – EXAMINATION – WINTER 2018

Subject Code: 3519906   **Date:01/01/2019**

Subject Name: Business Statistics

Time: 10:30 AM to 01:30 PM   **Total Marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1   Explain the terms   **14**
  a) Mode
  b) Histogram
  c) Mutually Exclusive events
  d) Independent Event
  e) Auto correlation
  f) Auto Regression
  g) Time Series data

Q.2 **(a)** The radio music listener market is diverse. Listener for mats might include adult   **07**
contemporary, album rock, top 40, oldies, rap, country and western, classic, and
jazz. In targeting audience, market researchers need to be concerned about the
ages of the listener attracted to particular formats. Suppose a marketer researcher
surveyed a sample of 170 listeners of oldies stations and obtained the following
age distribution.

Age	Frequency
15-under 20	9
20-under 25	16
25-under 30	27
30-under 35	44
35-under 40	42
40-under 45	23
45-under 50	7
50-under 55	2

  I.   What are the mean and modal ages of oldies listeners?
  II. What are the variance and standard deviation of the age's oldies listener?

(b) Discuss the four level of data measurement.   **07**

OR

(b) Define Statistics. Explain business applications of statistics.   **07**

Q.3 **(a)** A public interest group was planning to make a court challenge to auto insurance   **07**
rates in one of the three cities: A, B, or C. The prob. that it would select A was
0.40, B 0.35, and C is 0.25. The group knows that it had a 45% chance of a
favorable ruling if it chose A, 60% if it chooses B and 35% if it chose C. If the
group did receive favorer able ruling, what is the probability that public interest
group has choose city A, B or C.? Use your Knowledge of Bayes' theorem.

(b) The Asian currency crisis of late 1997 and early 1998 was expected to lead to   **07**
substantial job losses in US. The Economic Policy Institute estimated that the
mean number of job losses would be 126,681. Assume that the number of jobs

1

lost is normally distributed with a standard deviation of 30,000. Find the following probabilities.
1) the number of lost jobs between 80,000 and 150,000
2) the number of lost jobs will be greater than 150,000
3) the number of lost jobs will be greater than 130,000
4) the number of lost jobs between 130,000 and 140,000

OR

Q.3 **(a)** A company produces 10 personal computers knowing that 3 of them have defective wiring. The company that purchased the computers is going to test the 2 of the computers. The purchasing company can detect the defective wiring. Use Hyper geometric distribution to determine the probability that the purchasing company will find the following? **07**
      I.   No defective computers
      II.   Exactly two defective computers.

(b) Use the following time-series data to answer the given questions. **07**

Time Period	Value	Time Period	Value
1	27	6	66
2	31	7	71
3	58	8	86
4	63	9	101
5	59	10	97

1. Develop forecasts for periods 5 through 10 using 4-month moving averages.
2. Develop forecasts for periods 5 through 10 using 4-month weighted moving averages. Weight the most recent month by a factor of 4, the previous month by 2, and the other months by 1.

Q.4 Use the following data and answer the mention questions

X	5	7	3	16	12	9
Y	8	9	1	27	15	13

(a) What is correlation? Explain different types of correlation with graphs. **07**
(b) Calculate the coefficient of correlation for above given data. **07**

OR

Q.4 **(a)** Establish a regression line using above given data. $(Y = b_0 + b_1X)$ **07**
(b) Estimate residuals using above given data. $(Y - \hat{Y})$ **07**

Q.5 Use the decision table given here and answer below given questions.

		State of Nature		
		S1	S2	S3
Decision	d1	250	175	-25
Alternative	d2	110	100	70
	d3	390	140	-80

(a) Use the maximax criterion to determine which decision alternative to select. **07**
(b) Use the maximin criterion to determine which decision alternative to select. **07**

OR

Q.5 **(a)** Use the Hurwicz criterion to determine which decision alternative to select. Let $\alpha = 0.3$ **07**
(b) Compute an opportunity loss table from the data. Use this table and a minimax regret criterion to determine which decision alternative to select **07**