Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA (AM) - SEMESTER– II • EXAMINATION – WINTER 2018

Subject Code: 4120503   **Date: 27/12/2018**
Subject Name: Business Statistics
Time: 02:30 PM To 05:30 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 **(a)** Give definition of following terms: **07**
          1) Histograms
          2) Frequency Polygon
          3) Ogives
          4) Stem & Leaf Plots
          5) Pie Charts
          6) Pareto Charts
          7) Scatter Plot

     (b) A random sample of voters in one of village in Gujarat is classified by age   **07**
groups, as shown by the following data.

Age group	Frequency
18 – under 24	17
24 – under 30	22
30 – under 36	26
36 – under 42	35
42 – under 48	33
48 – under 54	30
54 – under 60	32
60 – under 66	21
66 – under 72	15

        a. Calculate the mean of the data
        b. Calculate the mode
        c. Calculate the variance
        d. Calculate the standard deviation

Q.2 **(a)** Write a detailed note on Structure of Probability.   **07**
     (b) Explain absolute and relative measure of Dispersion   **07**
<div align="center">OR</div>

     (b) A public interest group was planning to make a court challenge to auto price   **07**
rates in one of three cities: Ahmedabad, Baroda or Surat. The probability that it
would choose Ahmedabad is 0.40; Baroda, 0.35; and Surat, 0.25. The group
also new that it had a 60% chance of a favorable ruling if it chose Baroda, 45%
if it chose Ahmedabad, and 35% if it chose Surat. If the group did receive a
favorable ruling, then use the Bayes' theorem to determine which city did it
most likely choose?

Q.3 **(a)** Explain various techniques of Sampling   **07**
     (b) Write a detailed note on reason for Sampling.   **07**

Q.3 **(a)** The client company data from the Decision Dilemma reveal that 155 employees **07** worked one of four types of positions. Shown here again is the raw values matrix
(Also called a contingency table) with the frequency counts for each category and for subtotals and totals containing a breakdown of these employees by type of position and by sex. If an employee of the company is selected randomly, what is the probability that the employee is female or a professional worker?

Type of Position	Sex	
	Male	Female
Managerial	8	3
Professional	31	13
Technical	52	17
Clerical	9	22

(b) What is the probability of obtaining a score greater than 700 on a GMAT test **07** that has a mean of 494 and a standard deviation of 100? Assume GMAT scores are normally distributed.

Q.4 **(a)** The following data are the average weekly mortgage interest rates for a 40- **07** week period. Construct a frequency distribution for these data. Calculate and display the class midpoints, relative frequencies, and cumulative frequencies for this frequency distribution.

7.29	7.23	7.11	6.78	7.47
6.69	6.77	6.57	6.80	6.88
6.98	7.16	7.30	7.24	7.16
7.03	6.90	7.16	7.40	7.05
7.28	7.30	6.87	7.68	7.03
7.17	6.78	7.08	7.12	7.31
7.40	6.35	6.96	7.29	7.16
6.97	6.96	7.02	7.13	6.84

(b) According to the National Association of Insurance Commissioners, the average **07** annual cost for automobile insurance in the United States in a recent year was $691. Suppose automobile insurance costs are uniformly distributed in the United States with a range of from $200 to $1,182. What is the standard deviation of this uniform distribution? What is the height of the distribution? What is the probability that a person's annual cost for automobile insurance in the United States is between $410 and $825?

Q.4 **(a)** Explain how statistics is helpful in business with proper examples. **07**

Q.4 (b) During one holiday season, the Texas lottery played a game called the Stocking **07**
Stuffer. With this game, total instant winnings of $34.8 million were available
in
70 million $1 tickets, with ticket prizes ranging from $1 to $1,000. Shown here
are the various prizes and the probability of winning each prize. Use these data
to compute the expected value of the game, the variance of the game, and the
standard deviation of the game.

Prize (X)	Probability P (X)
1000	0.00002
100	0.00063
20	0.004
10	0.00601
4	0.02403
2	0.08877
1	0.10479
0	0.77175

Q.5 (a) Use the following data for parts (a) through (f). **14**

X	5	7	3	16	12	9
Y	8	9	11	27	15	13

     a. Determine Correlation between two variables.
     b. Determine the equation of the least squares regression line to predict y
        by x.

OR

Q.5 (a) Explain Uniform Distribution with example. **07**
     (b) Explain Exponential Distribution with example. **07**

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