

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA – SEMESTER I – EXAMINATION – SUMMER 2019

Subject Code: 2810007

Date: 22/05/2019

Subject Name: Quantitative Analysis-I

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) Answer the following questions

6

1. The simple probability of occurrence of an event is called the
A. Joint Probability B. Marginal probability
C. Conditional Probability D. Bayesian Probability
2. For two tail test of hypothesis, the acceptance region is the entire region
A. To right of negative critical value B. Between two critical values
C. Outside the two critical values D. To left of positive critical value
3. The central limit theorem assures us that the sampling distribution of the mean
A. Is always normal B. Is always normal for large sample
C. Approaches normality as sample size increases D. Appears normal when $n=1000$
4. A chi square test on a contingency table with four rows and four columns will have degrees of freedom
A. 16 B. 8
C. 6 D. 9
5. Which of the following is an example of a parameter?
A. Σ B. μ
C. N D. All of these
6. With lower significance level, the probability of rejecting a null hypothesis that is actually true:
A. Decreases B. Increases
C. Remains same D. None of these

Q.1 (b) Discuss descriptive and inferential statistics.

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Q.1 (c) What do you mean by skewness? Explain types of skewness with appropriate figures.

4

Q.2 (a) Discuss basic levels of data measurement with appropriate examples.

7

- (b)** A private sector bank conducted a survey to assess the investment intention of people after the crash of share market in October 2008. In all, 70% people responded that they will invest in government schemes, 65% responded that they will invest in mutual funds. If a researcher selected 25 potential customers at random:

7

- i. What is the probability that exactly 14 customers said that they will invest in government schemes?
- ii. What is the probability that 10 or fewer customers will invest in government investment schemes?
- iii. What is the probability that more than 20 customers invest in Government bonds?

OR

- (b) A public interest group was planning to make a court challenge to auto insurance 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 favourable ruling, what is the probability that they choose (i) city A, (ii) City B (iii) City C. 7

- Q.3 (a) Discuss characteristics of Uniform and Poisson distribution 7
- (b) A brand manager is concerned that her brand's share may be unevenly distributed throughout the country. In a survey in which the country was divided into four geographic regions, a random sampling of 100 consumers in each region was surveyed, with the following results: 7

	NE	NW	SE	SW
Purchase the brand	40	55	45	50
Do not purchase	60	45	55	50

Calculate the expected frequencies and test whether brand share is the same across the four regions. Use significance level of 0.05

OR

- Q.3 (a) What is stratified sampling? How is it different from cluster sampling? 7
- (b) An insurance company has developed a training program that is entirely self-paced. In last several years, the average completion of training program is 44 days with a standard deviation of 12 days. 7
- (i) What is the probability an employee will finish the program in 33 to 42 days?
- (ii) What the probability of finishing the program in fewer 30 days?
- (iii) More than 60 days?
- Q.4 (a) What are types of error in hypothesis testing? Discuss one tail and two tail test with appropriate figures. 7
- (b) Two research laboratories have independently produced drugs that provide relief to arthritis patients. The first drug was tested on a group of 90 arthritis patients and produced an average of 8.5 hours of relief and a standard deviation of 1.8 hour. The second drug was tested on 80 patients producing an average of 7.9 hours and a standard deviation of 2.1 hours. At the 0.05 level of significance, does the second drug provide a significantly shorter period of relief? 7

OR

- Q.4 (a) Explain in detail graphical representation of data. 7
- (b) A television documentary on overeating claimed that Indians are about 10 kgs overweight on average. To test this claim, 18 randomly selected individuals were examined, their average excess weight was found to be 12.4 kgs and the sample standard deviation was 2.7 kgs. At significance level of 0.01, test the whether the average excess weight is different from the claim. 7

- Q.5** An investment company is interested to know how interest rates are affecting the new housing starts in the area. To explore this question; the company has gathered data on new housing starts during the past three quarters for the five surrounding regions. This information is presented in the following table. At the 0.05 level of significance, are there any differences of new housing starts during the three quarters? **14**

Quarter 1	41	53	54	55	43
Quarter 2	45	51	48	43	39
Quarter 3	34	44	46	45	51

Also discuss the assumptions of Analysis of variance (ANOVA) test.

OR

- Q.5** Happy Cola is studying the effect of its latest advertising campaign. People chosen at random were called and asked how many cans of Happy cola they had brought in the past week and how many advertisements of Happy cola they have either read or seen in the past week. **14**

X(number of ads)	3	7	4	2	0	4	1	2
Y (cans Purchased)	11	18	9	4	7	6	3	8

- (a) Develop the estimating equation that best fits the data
(b) Discuss and calculate the coefficient of determination and correlation coefficient
