

GUJARAT TECHNOLOGICAL UNIVERSITY**MBA – SEMESTER - I – EXAMINATION – WINTER 2021****Subject Code:4519207****Date: 22/03/2022****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. No.		Marks
Q.1	Write about following terms (a) Interquartile range (b) Type I & Type II (c) coefficient of variation (d) Bayes' rule (e) Mann-Whitney U test (f) Friedman's test (g) Ordinal Data	14
Q.2	(a) Write a note on statistical charts and graphs	07
	(b) According to a report by Scarborough research, the avg. monthly household cellular phone bill is \$60. suppose local monthly household cell phone bills are normally distributed with a standard deviation of \$11.35. a. what is the probability that randomly selected monthly cell phone bill is more than \$85? b. what is the probability that randomly selected monthly cell phone bill is between \$45 and \$70? c. what is the probability that randomly selected monthly cell phone bill is between \$65 and \$75? d. what is the probability that randomly selected monthly cell phone bill is no more than \$40?	07
OR		
	(b) A public interest group was planning to make a court challenge to auto insurance rates in one of three cities: Atlanta, Baltimore and Cleveland. The probability that it would choose Atlanta was 0.40, Baltimore ,0.35, and Cleveland, 0.25. The group also knew that it had a 60 percent chance of favorable ruling if it chose Baltimore, 45 percent if it chose Atlanta and 35 percent if it chose Cleveland. If the group did receive a favorable ruling, which city did it most likely choose?	07
Q.3	(a) Write a note on types of variables	07
	(b) A company's auditor believes the per diem cost in Nashville, Tennessee, rose significantly between 1996 and 2006. To test this belief, The auditor samples 51 business trips from the company's records for 1996, the sample average was \$190 per day with a population standard deviation of \$18.50. the auditor selects a second random sample of 47 business trips from company's records for 2006, the sample average was \$198 per day, with a population standard deviation of \$15.60. if he uses a level of significance 0.01. does the auditor find that the per diem average expense in Nashville has gone up significantly?	07

OR

- Q.3 (a)** For following data find mean, median and mode and identify Best measure of central tendency **07**

class	frequency
10-20	15
20-30	62
30-40	54
40-50	9
50-60	10
Total	150

- (b)** In an attempt to determine why customer service is important to managers in the United Kingdom, Researchers surveyed managing directors of manufacturing plants in Scotland. one of the reasons proposed was that customer service is a means of retaining customers. On a scale from 1 to 5 , with 1 being low and 5 being high the survey respondents rated this reason more highly than any of the others, With a mean response of 4.3. suppose U.S. researchers believe American manufacturing mangers would not rate this reason as highly and conduct a hypothesis test to prove their theory. Alpha is set 0.05. Data are gathered, and the following results are obtained. Use these data and the eight steps of steps of hypothesis testing to determine whether U.S. managers rate this reason significantly lower than the 4.3 mean ascertained in the United Kingdom. Assume from previous studies that the population standard deviation is 0.574

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- Q.4 (a)** Find following probabilities **07**

A	D	E	F	G
B	3	9	7	12
C	8	4	6	4
D	10	5	3	7

1. $P(A)$
2. $P(A/B)$
3. $P(B)$
4. $P(EF)$
5. $P(D/B)$
6. $P(B/D)$
7. $P(F)$

- (b)** Find variance and standard deviation for following data **07**
2618, 2118, 2027, 1535, 312, 281

OR

- Q.4 (a)** Write a note on multidimensional scaling **07**
(b) Write a note on difference between parametric and non-parametric data **07**

Q.5

A well-known chemical company is concern about money spent on research and development and the firm's annual profit. Following table represents the information for last 6 years.

year	\$ million spent on research	Annual profit in \$ millions
2013	5	31
2014	11	40
2015	4	30
2016	5	34
2017	3	25
2018	2	20

- (a) Identify independent and dependent variables and prepare scatter diagram. **07**
- (b) Fit regression equation line **07**

OR

- Q.5** (a) Find standard error of estimate and find estimate value for Annual profit if planning to spend money behind research in next three years are 9,7,6 respectively **07**
- (b) Find correlation value and interpret it. **07**
