Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA– SEMESTER -I–EXAMINATION – WINTER 2021

Subject Code: 1519504   **Date: 16-03-2022**
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.1 **(a)** Give definition of following terms: **14**

   1. Interquartile range

   2. Coefficient of variation

   3. Parametric test

   4. Nonparametric test

   5. Probability

   6. Uniform distribution

   7. Quartile

Q.2 **(a)** Compute Mean and Median of following data.   **07**

Class	f
0–2	31
2– 4	26
4– 6	12
6–8	11
8–10	14
10–12	7
12-.14	9

(b) The following data represent the number of passengers per flight in a sample of 50   **07**
flights from Ahmedabad to Bombay. 23, 46, 66, 67, 13, 58, 19, 17, 65, 17, 25, 20, 47,
28, 16, 38, 44, 29, 48, 29, 69, 34, 35, 60, 37, 52, 80, 59, 51, 33, 48, 46, 23, 38, 52, 50,
17, 57, 41, 77, 45, 47, 49, 19, 32, 64, 27, 61, 70, and 19.

   i) Construct a stem-and-leaf plot for these data. What does the stem-and-leaf
      plot tell you about the number of passengers per flight?

   ii) Construct a dot plot for these data.

OR
(b) Explain various types of variables with proper examples.   **07**

Q.3 **(a)** Compute Q1, Q2, Q3, and IQR for the following data.   **07**

67	78	91	100	104	107	111	112	116	118
119	119	122	123	132	138	139	143	143	145
162	170	172	211						

(b) A study by AB Research Associates for the NSE revealed that 43% of all Indian adults are stockholders. In addition, the study determined that 75% of all Indian adult stockholders have some college education. Suppose 37% of all Indian adults have some college education. An Indian adult is randomly selected. **07**

a. What is the probability that the adult has neither some college education nor owns stock?

b. What is the probability that the adult does not own stock or has no college education?

c. What is the probability that the adult has some college education and owns no stock?

OR

Q.3 **(a)** An increasing number of old age people believe they have to look out for themselves. According to a survey conducted by the XYZ limited for VC WEEKEND magazine, 60% of all senior citizens have called an 14567-telephone number for either information or complain. Suppose a random sample of 25 senior citizens are contacted and interviewed about their experience. **07**

a. What is the probability that 15 or more of these senior citizens have called an 14567-telephone number for information or complain?

b. What is the probability that more than 20 of these senior citizens have contacted 14567 telephone number for information or complain?

(b) The average number of annual trips per family to amusement parks in Gujarat is 0.6 (mean value) trips per year. What is the probability of randomly selecting an Gujarat family and finding the following? **07**

a. The family did not make a trip to an amusement park last year.

b. The family took exactly one trip to an amusement park last year.

c. The family took two or more trips to amusement parks last year.

Q.4 **(a)** The National Safety Council released the following data on the incidence rates for fatal or lost-worktime injuries per 100 employees for several industries in three recent years. Calculate the correlation between year 1 and year 2. **07**

Industry	Year 1	Year 2
Textile	0.46	0.48
Chemical	0.52	0.62
Communication	0.90	0.72
Machinery	1.50	1.74
Services	2.89	2.03
Metals	1.80	1.92
Food	3.29	3.18
Government	5.73	4.43

(b) Executives of a video rental chain want to predict the success of a potential new store. The company's researcher begins by gathering information on number of rentals and average family income from several of the chain's present outlets. Develop a regression model to predict the number of rentals per day by the average family income. Comment on the output. **07**

Rentals	Average Family Income (Rs. 1000)
710	65
529	43
314	29
504	47
619	52
428	50
317	46
205	29
468	31
545	43
607	49
694	64

OR

Q.4 **(a)** According to a study several years ago by the Personal Communications Industry Association, the average wireless phone user earns $62,600 per year. Suppose a researcher believes that the average annual earnings of a wireless phone user are lower now, and he sets up a study in an attempt to prove his theory. He randomly samples 18 wireless phone users and finds out that the average annual salary for this sample is $58,974, with a population standard deviation of $7810. Use = .01 to test the researcher's theory. **07**

(b) What is hypothesis? Explain hypothesis process in detail with examples. **07**

Q.5 **(a)** Use the following contingency table and the chi-square test of independence to determine whether social class is independent of number of children in a family. Let a = .05. **14**

Social Class

Number of Children	Lower	Middle	Upper
0	7	18	6
1	9	38	23
2 or 3	34	97	58
More than 3	47	31	30

OR

Q.5 **(a)** Write short note on Factor analysis. **07**

(b) Explain difference between univariate and bivariate test. **07**

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