

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA (PART TIME) – SEMESTER 2 – EXAMINATION – SUMMER 2019

Subject Code: 4529901

Date: 09/05/2019

Subject Name: Business Statistics (BS)

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 Definitions / terms / explanations / short questions **14**

- a) Explain different types of kurtosis.
- b) Level of significance.
- c) Type II error.
- d) Types of correlation.
- e) List assumptions of simple linear regression.
- f) Give interpretation of a Spearman's Rank coefficient of -1.
- g) Give names of some bivariate non parametric tests.

Q.2 (a) Explain properties of Normal Distribution. **07**

- (b)** The average percentage of failures in a certain examination is 40. **07**
- a) What is the probability that out of a group of 6 candidates, at least 4 passed in the examination?
 - b) What is the probability that at the most 2 passed?

OR

(b) Major problems in aircraft landing are very rare in an international airport. The number of major problems are Poisson distributed with a mean of 5 per year. **07**

- a) What is the probability that no major problem will occur in a year?
- b) What is the probability that three or fewer major problem will occur in a year?

Q.3 (a) A student studying MBA is considering three possible careers in Pharmaceutical Industry: Finance, Sales and HRM. Since she is interested in rapid advancement, she has surveyed the advancement of 18 top executives in each of these areas. The ages at which current executive level rank was reached are shown below: **07**

| Finance | Sales | HRM |
|---------|-------|-----|
| 46 | 38 | 45 |
| 48 | 43 | 44 |
| 52 | 39 | 47 |
| 43 | 45 | 46 |
| 47 | 36 | 46 |
| 51 | 43 | 39 |

At 5% level of significance, can this student conclude that the three areas offer her the same opportunity?

- Q.3 (b)** Ten female respondents are exposed to an advertising campaign about a fairness cream. The results are given below: **07**

| Respondent | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|--------------|----|----|----|----|----|----|----|----|----|----|
| Score Before | 35 | 37 | 38 | 36 | 40 | 35 | 30 | 38 | 36 | 38 |
| Score After | 40 | 38 | 39 | 36 | 44 | 45 | 35 | 37 | 40 | 45 |

Test whether the advertisement campaign is successful at a level of significance of 5%.

OR

- Q.3 (a)** The following data gives the aptitude test scores and productivity indices of 10 workers selected at random. **07**

| | | | | | | | | | | |
|-------------------------------|----|----|----|----|----|----|----|----|----|----|
| Aptitude Score (X) | 60 | 62 | 65 | 70 | 72 | 48 | 53 | 73 | 65 | 82 |
| Productivity Index (Y) | 68 | 60 | 62 | 80 | 85 | 40 | 52 | 62 | 60 | 81 |

By using simple linear regression analysis, estimate the productivity index of a worker whose test score is 90.

- Q.3 (b)** The breaking strength of cables produced by a manufacturer has a mean of 1800 kg and a standard deviation of 100 kg. By a new technique of manufacturing process it is claimed that the breaking strength will be increased. **07**

To test this claim a sample of 50 cables were tested and it is found that the mean breaking strength is 1850 kg. Can we support the claim at a significance level of 1%?

- Q.4 (a)** What are non-parametric tests? Explain Kruskal – Wallis Test and when it can be used. **07**

- (b)** Two housewives were asked to express their preferences about different kind of detergents available in the market. The result of the same is shown **07**

| Detergent | A | B | C | D | E | F | G | H | I | J |
|-----------|---|---|---|---|---|---|---|---|---|----|
| Neena | 1 | 2 | 4 | 3 | 7 | 8 | 6 | 5 | 9 | 10 |
| Meena | 1 | 4 | 2 | 3 | 5 | 7 | 6 | 8 | 9 | 10 |

To what extent the preferences of the two ladies match?

OR

- Q.4 (a)** What is Discriminant Analysis? Give some practical use of Discriminant Analysis in Business? **07**

- (b)** The retail sale of clothes is classified as low, moderate and high, according to the volume of sales and during the four quarters of a calendar year the actual sales is mentioned in lacs in the table below: **07**

| Volume of sale | Quarter | | | |
|----------------|---------|----|-----|----|
| | I | II | III | IV |
| Low | 18 | 10 | 7 | 5 |
| Moderate | 17 | 16 | 17 | 20 |
| High | 5 | 14 | 26 | 35 |

Is there a significant evidence the in above data to show that the volume of retail sale of clothes depends on the period of the year? (Take $\alpha = 5\%$)

Q.5 A survey was carried out to study how much a young couple spends on eating out at fast food joints per occasion. **14**

The following data was collected after questioning 100 young couples.

| Amount Spent (Rs.) per occasion | No of Young Couples |
|---------------------------------|---------------------|
| 200 - 400 | 5 |
| 400 - 600 | 19 |
| 600 - 800 | 30 |
| 800 - 1000 | 26 |
| 1000 - 1200 | 20 |

Answer the following:

- What is the average and modal spending of the couples per occasion?
- Analyze whether the spending is skewed? On which side?

OR

- What is the median spending of the couples per occasion?
- By using quartiles, find above which amount 75% of the young couples spend? Also find above which amount 25% of the young couples spend?
