Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA – SEMESTER 1 – EXAMINATION – WINTER 2018

Subject Code: 4519207 **Date:01/01/2019**

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 Explain following terms with the help of suitable example. **14**

(a) Skewness
(b) Frequency Distribution
(c) Conditional Probability
(d) Box Plot
(e) Coefficient of Variation
(f) Empirical rule
(g) Level of Significance

Q. 2 (a) Explain four levels of measurement with suitable example. **07**

(b) The following data represent the sales of car tyres of several brands by a retail showroom of tyres during the year 2001-02. **07**

Brand of Tyre	Dunlop	Modi	Firestone	Ceat	Goodyear	JK
Tyres Sold	136	221	138	84	101	120

(i) Construct a relative and percentage frequency distribution.
(ii) Construct a bar and pie chart. Which of these charts you prefer to use? Why?

OR

(b) From a sales force of 150 persons, one will be selected to attend a special sales meeting. If 52 of them are unmarried, 72 are college graduates and $3/4^{th}$ of the 52 unmarried are college graduates, find the probability that the salesperson selected at random will be neither single nor a college graduate. **07**

Q. 3 (a) List out the characteristics of Binomial and Poisson distribution along with the parameters mean and standard deviation. **07**

(b) The mean inside diameter of a sample of 500 washers produces by a machine is 5.02 mm and standard deviation is 0.05 mm. The purpose for these washers are intended allows maximum tolerance in the diameter of 4.96 to 5.08 mm, otherwise the washers are considered defective. Determine the percentage of defective washers produced by the machine, assuming the diameters are normally distributed. **07**

OR

Q. 3 (a) Write a note on non-parametric tests. **07**

(b) National Healthcare Company samples its hospital employees' attitude towards performance in different regions. Respondents are given a choice between the present method of two reviews a year and a proposed new method of quality reviews. The responses are given below

Details	North	South	East	West
Method I	68	75	79	57
Method II	32	45	31	33

Test whether there is any significance difference in the attitude of employees in different regions at 5 % level of significance. **07**

Q. 4. (a) Write a note on the following: **07**

(i) Null and alternate hypothesis
(ii) Type I and Type II error
(iii) One tailed and two tailed test.

(b) An automobile tyre manufacturer claims that the average life of a particular grade of tyre is more than 20000km when used under normal conditions. A random sample of 16 tyres was tested and a mean and standard deviation of 22000 Km and 5000 km, respectively were computed. Assuming the life of the tyres in Km to be approximately normally distributed, decide whether the manufacturer's claim is valid. Consider level of Significance is 5%. **07**

OR

Q. 4 (a) (i) List the assumption used in simple linear regression model. **07**
(ii) List the assumptions in one way ANOVA.

(b) The following data relating to the number of weeks of experience in a job involving the wiring of an electric motor and the number of motors rejected during the past week for 12 randomly selected workers.

Workers	Experience (weeks)	No of Rejects
1	2	26
2	9	20
3	6	28
4	14	16
5	8	23
6	12	18
7	10	24
8	4	26
9	2	38
10	11	22
11	1	32
12	8	25

Determine the linear regression equation for estimating the number of components rejected given the number of weeks of experience. **07**

Case Study

Q 5 Police records show the following numbers of daily crime reports for a sample number of days during the winter months and a sample number of days during the summer months. **14**

Winter:	18	20	15	16	21	20	12	16	19	20
Summer:	28	18	24	32	18	29	23	38	28	18

a. Compute the Mean, median and mode for each period.
b. Compute the Range and Interquartile range for each period.

OR

a. Compute the variance and Standard deviation for each period.
b. Compute the coefficient of variation for each period.

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