Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA Integrated - SEMESTER– II EXAMINATION – WINTER 2022

Subject Code: 2527102 Date: 05/01/2023

Subject Name: Business Statistics

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)** Explain the utility of statistics as a managerial tool. Also discuss its limitation **07**

(b) A Study of 100 electric companies gives the following information **07**

Profit(Rs.In Crore	0-10	10-20	20-30	30-40	40-50	50-60
No. of companies	8	12	20	30	20	10

Calculate Mean, standard deviation and variance.

OR

Q.2 **(a)** Explain uses and properties of correlation and Regression analysis. **07**

(b) A husband and wife appear in an interview for two vacancies in the same post. The Probability of husband's selection is 1/7 and that of wife's selection is 1/5.What is the probability that **07**

I. Both of them will be selected.

II. Only one of them will be selected.

III. None of them will be selected.

OR

(b) Discuss the various types of events under the concept of probability. **07**

Q.3 **(a)** Charts are more attracting attention than other methods of presenting data. Do you agree? Give reason for your answer. **07**

(b) Find the missing frequencies in the following frequency distribution. The Arithmetic mean of the given data is 11.09 **07**

Class Interval	Frequency
9.3 – 9.7	2
9.8 - 10.2	5
10.3 - 10.7	x
10.8 – 11.2	y
11.3 – 11.7	14
11.8 – 12.2	6
12.3 – 12.7	3
12.8 – 13.2	1
Total	60

OR

Q.3 **(a)** What do you understand by 'coefficient of variation'? Discuss its importance in business problems. **07**

(b) The following data relate to area in millions of square kilometer of oceans of the world. **07**

Ocean	Area(Million sq km)
Pacific	70.8
Atlantic	41.2
Indian	28.5
Antarctic	7.6
Arctic	4.8

Draw a Pie chart for this data.

Q.4 **(a)** What is a scatter diagram? How does it help in studying the correlation between two variables, in respect of both its direction and degree? **07**

(b) A can hit a target 3 times in 5 shots; B, 2 times in 5 shots; C, 3 times in 4 shots. They fire a volley. What is the probability that 2 shots will hit the target? **07**

OR

Q.4 **(a)** The following table gives the distribution of items of production and also the relatively defective items among them, according to size of groups. Find the correlation coefficient between size and defect in quality. **07**

Size – group	No. of items	No. of defective items
15-16	200	150
16-17	270	162
17-18	340	170
18-19	360	180
19-20	400	180
20-21	300	114

(b) Assume that a factory has two machines. Past records show that the machine I Produces 30 percent of the items of output and machine II produces 70 percent of the items. Further, 5 percent of the items produced by machine I were defective and only I percent produced by machine 2 were defective. If a defective item is drawn at random, What is the probability that the defective item was produced by machine I or machine II? **07**

Q.5 **(a)** What are advantages and disadvantages of the three common measures of central tendency. **07**

(b) From a computer tally based on employer records, the personnel manager of a Large manufacturing firm finds that 15 percent of the firm's employees are Supervisors and 25percent of the firm's employees are college graduates. He also Discover that 5 percent are both supervisors and college graduates. Suppose an Employee is selected at random from the firm's personnel records, what is the Probability of: **07**

1. Selecting a person who is both a college graduate and a supervisor?
2. Selecting a person who is neither a supervisor nor a college graduate?

OR

Q.5 **(a)** The following distribution gives the pattern of overtime work per week done by 100 employees of a company. Calculate Q_1, D_7, P_{60}. **07**

Overtime hours	10-15	15-20	20-25	25-30	30-35	35-40
No. of employees	11	20	35	20	8	6

(b) Explain the concept of permutation and combination with respect to probability. **07**

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