Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

First Semester MBA Degree Regular and Supplementary Examination December 2022

Course Code: 20MBA103

Course Name: QUANTITATIVE TECHNIQUES FOR MANAGERS

Max. Marks: 60 Duration: 3 Hours

PART A

Answer all questions. Each question carries 2 marks Marks

1 "Diagrams help us visualise the whole meaning of a numerical data at a single instant". Justify this statement. (2)

2 Write a short note on Bayes' theorem (2)

3 What is a hypothesis? (2)

4 What are the objective methods of forecasting? List them? (2)

5 What is Co-efficient of Determination? What is its use in Business Decision Making? (2)

PART B

Answer any 3 questions. Each question carries 10 marks

6 (a)The following table gives the marks of 58 students. Calculate the average marks of this group. (5)

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Students	4	8	11	15	12	6	2

(b)Calculate the standard deviation of the following data: (5)

20 15 19 24 16 14

7 (a) An MBA holder applies for a job in two firms, X and Y. The probability that he will be selected in firm X is 0.7 and of being rejected in firm Y is 0.5. The probability of at least one of his applications being rejected is 0.6. What is the probability that he will be selected in one of the firms? (5)

(b)A product is assembled from two components A and B. The probability of component A being defective is 0.03 and B being defective is 0.02. What is the probability that the assembled component will not be defective? (5)

8 (a) A manufacturing company finds that 10 % of the tools are defective in a production process. Find the probability that in a random sample of 20, exactly 4 will be defective? (5)

(b)A company manufacturing automobile tyres find that tyre-life is normally distributed with a mean of 40,000 km and a standard deviation of 3,000 km. It is believed that a change in the production process will result in a better product and the company has developed a new tyre. A sample of 100 tyres has been selected. The company has found that the mean life of the tyres is 40,900. Can it be concluded that the new tyre is significantly better than the old one, using a significance level of 0.01? (5)

9 (a)Suppose a coin is tossed 200 times with the following results (5)

Event	**Frequency**
Head	90
Tail	110
Total	**200**

Is this a fair coin?

(b)What are the components of time series? List with examples? (5)

10 (a) Suppose that 10 salesmen employed a company are given a month's training. At the end of the specific training, they took a test and were ranked on the basis of their performance. They were then posted to their respective areas. At the end of six months, they were rated in respect of their sales performance. The ranks are as follows. (5)

Salesmen	1	2	3	4	5	6	7	8	9	10
Training	4	6	1	3	9	7	10	2	8	5
Sales	5	8	3	1	7	6	9	2	10	4

Calculate the coefficient of rank correlation and comment on the results

(b)When is multiple regressions needed? Explain with the help of an example. (5)

PART C

Compulsory question carrying 20 marks

11 (a)The table given below shows the data obtained during the outbreak of COVID'19 (10)

	Attacked	**Not-attacked**	**Total**
Vaccinated	31	469	500
Not vaccinated	185	1315	1500
Total	**216**	**1784**	**2000**

Test the effectiveness of vaccination @ 5 % level of significance.

(b) A company has appointed four salesmen A,B,C, D and observed their sales in three seasons-summer, winter and monsoon. The figures in lakhs are given in the following table. (10)

	Salesmen				
Seasons	**A**	**B**	**C**	**D**	**Season Total**
Summer	36	36	21	35	128
Winter	28	29	31	32	120
Monsoon	26	28	29	29	1125
Salesman Totals	**90**	**93**	**81**	**96**	**360**

Using a 5 % level of significance, perform an ANOVA

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