Register No.: ……………………………… Name.: ………………………………………………………………

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIRST SEMESTER MBA DEGREE EXAMINATION (Regular), DECEMBER 2022
(2021 Scheme)

Course Code: **21MBA103**

Course Name: **Quantitative Techniques for Managers**

Max. Marks: **60**   **Duration: 3 Hours**

Use of calculators and statistical tables is permitted.

PART A
(Answer all questions. Each question carries 2 marks)

1. Goals scored by a hockey team in successive matches are 5, 7, 4, 2,4, 0, 5, 5 and 3. Estimate the number of goals, the team must score in 10 th match in order that the average comes to be 4 goals per match?
2. Define Poisson distribution and under what conditions binomial distribution tends to Poisson distribution?
3. Differentiate Null hypothesis and Alternative hypothesis
4. List out the various components of a time series analysis.
5. What is correlation Analysis?

PART B
(Answer any 3 questions. Each question carries 10 marks)

6. ABC Stereos, a wholesaler, was contemplating, becoming the supplier to three retailers, but inventory shortages have forced him to select only one. ABC's credit manager is evaluating the credit record of these three retailers. Over the past five years these retailers account receivable has been outstanding for the following average number of days. The credit manager feels that consistency, in addition to lowest average, is important. Based on suitable relative measure of dispersion, justify which retailer would make the best consumer?

Lee	61.80	62.20	63.40	63.00	61.70
Forest	61.90	62.50	63.80	63.00	61.70
Davis	61.90	62.00	63.00	63.90	61.70

7. **1)** A manufacturer finds that the average demand per day for the mechanics to repair his new products is 1.5, over a period of one year and the demand per day is distributed as Poisson variate. He employs two mechanics. On how many days in one year

   (a) there is no demand for mechanics   (Marks:2)

(b) demand for mechanics is greater than 2   (Marks:3)

2) . The mean and standard deviations of the wages of 6,000 workers engaged in a factory are Rs. 1,200 and Rs. 400 respectively. Assuming the distribution to be normally distributed, estimate

(a) Percentage of workers getting wages above Rs 1,600   (Marks:2.5)

(b) Number of workers getting wages between Rs. 600 and Rs. 900

       (Marks:2.5)

8. A milk producers union wishes to test whether the preference pattern of consumers for its product is dependent on income levels. A random sample of 500 individuals gives the following data

Income	Product preferred		
	Product : A	Product : B	Product : C
Low	170	30	80
Medium	50	25	60
High	20	10	55

Can you conclude that the preference pattern is independent of income levels?(at level of significance 5%)

9. An investigation of the relative merits of two kinds of flash light batteries showed that a random sample of 100 batteries of brand X lasted on an average 36.5 hours with a standard deviation of 1.8 hours, while a random sample of 80 batteries of brand Y lasted on an average 36.8 hours with a standard deviation of 1.5 hours. Use a level of significance of 0.05 to test whether the observed difference between the average lifetimes is significant or not ?

10. The following data give the experience of machine operators and their performance ratings as given by the number of good parts turned out per 100 pieces :

Operator	1	2	3	4	5	6	7	8
Experience(years)	16	12	18	4	3	10	5	12
Performance ratings	87	88	89	68	78	80	75	83

Formulate the regression equation of performance ratings on experience and estimate the probable performance, if the operator has 7 years of experience

PART C
(Compulsory question, the question carries 20 marks)

11.

a) A company appoints four salesman A, B, C and D and observes their sales in three seasons: summer, monsoon and winter. The figures of their sales (in lakhs) are given in the following table.

<div align="center">Salesmen</div>

Seasons	A	B	C	D
Summer	36	36	21	35
Winter	28	29	31	32
Monsoon	26	28	29	29

Carry out an analysis of variance and test whether there is any significant difference in the salesmen, so far as sales are concerned .

Marks(10)

b) Fit a straight line trend to the following data by the least square method and plot the original values and trend values. Estimate the production in the year 2023 and 2025

Year	2012	2014	2016	2018	2020
Production ('000)	18	21	23	27	16

Marks (10)

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