

Register No.: Name.:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIRST SEMESTER MBA / MBA (Logistics and Supply Chain Management)**DEGREE EXAMINATION (R), DECEMBER 2023****(2021 Scheme)****Course Code: 21MBA103/23MBL103****Course Name: Quantitative Techniques for Managers****Max. Marks: 60****Duration: 3 Hours**

Use of calculators and statistical tables permitted. Any values assumed should be stated clearly.

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

1. Recall the various methods of data collection.
2. What do you mean by Binomial distribution?
3. What is type I and Type II error?
4. List the components of time series analysis.
5. Explain linear and non-linear correlation.

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

6. a) Form an ordinary frequency table from the following cumulative distribution of marks obtained by 22 students and calculate
(1) Mean (2) Median (3) Mode

Marks below	10	20	30	40	50
No. of Students	3	8	17	20	22

Marks (6)

- b) For a frequency distribution Median =132.8, Mode =141.3. Find Mean.

Marks (4)

7. (a) In a dairy, the milk is filled in sachets of 500 gram by machines A, B and C, which respectively produce 25%, 35% and 40% of the total output. It is also found that 5%,4% and 2% of the sachets produced by machine A, B and C have either overfilling or underfilling of milk. A government inspector made a random check and found that the sachet was not correctly filled and booked a case against the dairy. The dairy management wanted to know which machine the sachet must have been filled. What are the probabilities that it was filled by machine A, B or C? Marks (6)

(b) Your professor tells you that if you score an 85 or better on your midterm exam, then you have a 90% chance of getting an A for the course. You think

you have only 50 % chance of scoring 85 or better. Find the probability that both your score is 85 or better and you receive an A in the course.

Marks (4)

8. The Kanakaria Cotton Yarn Trading Company claims that its product has an average breaking strength of at least 90 lbs. The Ahmedabad Weaving Mills is interested in testing the company's claim regarding the breaking strength of the yarn. The weaving master of Ahmedabad Weaving Mills considers it much more serious to buy a batch of yarn with mean breaking strength of more than or equal to 90 lbs than to reject one with a mean breaking strength of more than 90 lbs. From the mill's past experience with this type of cotton yarn with various cotton yarn suppliers, it was observed that the standard deviation of breaking strength is 12 lbs. In order to test Kanakaria claim, a sample of 16 pieces of yarn was selected from a batch of yarn supplied, and the average breaking strength was found to be 92 lbs. Given this example information, should the weaving master accept the Kanakaria's claim?
9. Following is the frequency distribution of the number of arrivals per unit of time (say, interval of 10 minutes) of the patients at the outpatient department of a local hospital. Using the Chi-square test of goodness of fit, verify whether the arrivals follow a Poisson probability distribution.

Number of arrivals per minutes(X)	0	1	2	3	4	5	6	7
Observed frequency(f)	10	30	40	50	35	20	10	5

10. Price index number of wheat (X) and cereals (Y) at twelve successive seasons(quarters) are given below.

X	87	84	88	102	101	84	72	84	83	98	97	100
Y	88	79	83	97	96	90	82	84	88	100	80	102

- a) Fit a line of regression of Y on X. Marks (8)
- b) Estimate the value of Y when X is 110. Marks (2)

PART C

(Compulsory question, the question carries 20 marks)

11. a) A certain company had 4-sales men A, B, C, D each of whom was sent for a month to three types of areas country side K, outskirts of a city O and shopping Centre of the city S. The sales in hundreds of rupees per month are shown below:

Areas	A	B	C	D
K	30	70	30	30
O	80	50	40	70
S	100	60	80	80

Carry out an analysis of variance to identify whether salesmen differ significantly in terms of sales and interpret the results. Marks (10)

b) Find Karl Pearson's co-efficient of correlation between the values of X and Y given below. Also find the probable error and interpret. Assume 69 and 112 as the mean values for X and Y respectively.

X	78	89	96	69	59	79	68	61
Y	125	137	156	112	107	136	123	108

Marks (10)
