

**FIRST SEMESTER M.A./M.Sc./M.Com. DEGREE EXAMINATION
DECEMBER 2019**

(CBCSS)

M.Com.

MCM 1C 03—QUANTITATIVE TECHNIQUES FOR BUSINESS DECISIONS

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

Section A

Answer any four questions.

Each question carries a weightage of 2.

1. Binomial distribution Vs Poisson distribution. Discuss.
2. Differentiate between null hypothesis and alternative hypothesis.
3. What is ANOVA ? Explain the One-factor ANOVA.
4. A package of gum claims that the flavour lasts more than 39 minutes. What would be the null hypothesis of a test to determine the validity of the claim ? What sort of test is this ?
5. What do you understand by coefficient of determination ?
6. Compare SPSS with MS Excel.
7. Explain acceptance region and rejection region.

(4 × 2 = 8 weightage)

Section B

Answer any four questions.

Each question carries a weightage of 3.

8. What is Correlation test ? Why it is performed ? Differentiate partial and multiple correlation.
9. The following are the speeds (in kilometer per hour) at which every fifth passenger car was timed at a certain checkpoint : 46, 58, 60, 56, 70, 66, 48, 54, 62, 41, 39, 52, 45, 62, 53, 69, 65, 65, 67, 76, 52, 52, 59, 59, 67, 51, 46, 61, 40, 43, 42, 77, 67, 63, 59, 63, 63, 72, 57, 59, 42, 56, 47, 62, 67, 70, 63, 66, 69 and 73. Test the null hypothesis of randomness at the 0.05 level of significance. (Given median speed = 59.5 km per hour)
10. A car hire firm has two cars, which it hires out day by day. The number of demands for a car on each day is distributed as a Poisson distribution with mean 1.5. calculate the proportion of days on which no car is used and the proportion of days on which some demand is refused. [$e^{-1.5} = 0.2231$]

Turn over

11. A farmer is trying out a planting technique that he hopes will increase the yield on his pea plants. The average number of pods on one of his pea plants is 145 pods with a standard deviation of 100 pods. This year, after trying his new planting technique, he takes a random sample of his plants and finds the average number of pods to be 147.

He wonders whether or not this is a statistically significant increase. What are his hypotheses and the test statistic?

12. The following information is obtained concerning an investigation of ordinary shops of small size :

	Shops		Total
	In towns	In villages	
Run by men	17	18	35
Run by women	3	12	15
Total	20	30	50

Can it be inferred that shops run by women are relatively more in villages than in towns? Use χ^2 test.

13. Calculate the correlation co-efficient for the following heights (in inches) of fathers (X) and their sons (Y) :

X	:	65	66	67	67	68	69	70	72
Y	:	67	68	65	68	72	72	69	71

14. Explain SPSS in detail. Write down the steps to perform a simple regression in SPSS and explain descriptive statistics.

(4 × 3 = 12 weightage)

Section C

Answer any two questions.

Each question carries a weightage of 5.

15. Set up an analysis of variance table for the following per acre production data for three varieties of wheat, each grown on 4 plots and state if the variety differences are significant :

Plot of land	Per acre production data		
	Variety of wheat		
	A	B	C
1	6	5	5
2	7	5	4
3	3	3	3
4	8	7	4

16. In a certain experiment to compare two types of pig foods A and B, the following results of increase in weights were observed in pigs :

Pig number		1	2	3	4	5	6	7	8	Total
Increase in weight in kg	Food A	49	53	51	52	47	50	52	53	407
	Food B	52	55	52	53	50	54	54	53	423

- (i) Assuming that the two samples of pigs are independent, can we conclude that food B is better than food A?
- (ii) Also examine the case when the same set of eight pigs were used in both the foods.
17. The following table gives the age of cars of a certain make and actual maintenance costs. Obtain the regression equation for costs related to age. Also estimate the maintenance cost for a ten years old car .

Age of car (years)	:	2	4	6	8
Maintenance cost	:	10	20	25	30
(Rs. hundred)					

(2 × 5 = 10 weightage)