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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. $[e^{-15} = 0.2231]$

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 as 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 (Rs. hundred)	:	10	20	25	30

(2 × 5 = 10 weightage)