

M. COM DEGREE END SEMESTER EXAMINATION - OCT 2020 : FEBRUARY 2021**SEMESTER 1 : COMMERCE****COURSE : 16P1COMT05 : QUANTITATIVE TECHNIQUES***(For Regular - 2020 Admission and Supplementary - 2016/2017/2018/2019 Admissions)*

Time : Three Hours

Max. Marks: 75

PART A**Answer any 10 (2 marks each)**

1. Suggest statistical test to evaluate the degree of dissimilarity?
2. Mention two methods of classifying of Quantitative Techniques.
3. Define Independent and Dependent events.
4. There are 3 green, 4 orange and 5 white color bulbs in a bag. If a bulb is picked at random, what is the probability of having either a green or a white bulb?
5. What is conditional probability? Give an example
6. Distinguish between a Parameter and a Statistic
7. Explain the uses of analysis of variance.
8. Explain population and sample with suitable illustration.
9. What do you mean by two-tailed test?
10. What are non-parametric tests?
11. P (of getting selected) = $\frac{1}{2}$. Identify the type of sampling and explain the meaning?
12. What is meant by Coefficient of Contingency ?

(2 x 10 = 20)**PART B****Answer any 5 (5 marks each)**

13. Give the importance of quantitative techniques for decision-making.
14. A market survey conducted in four places pertained to the preference of Vivel soap. The responses are given below.

Reponses	Nakapuzha	Fortkochi	Muvattupuzha	Angamaly
Yes	45	55	60	50
No	35	45	35	45
No Opinion	5	5	5	5

- a. What is the probability that a consumer selected at random preferred Vivel soap?
 - b. What is the probability that a consumer selected at random preferred Vivel soap and was from Muvattupuzha?
 - c. What is the probability that a consumer selected at random preferred Vivel soap given that she was from Muvattupuzha?
 - d. Given that a consumer preferred Vivel soap, what is the probability that she was from Nakapuzha?
15. Case Analysis
On April 20, 1999, Eric Harris and Dylan Klebold entered Columbine High School and began shooting teachers and students. Thirteen individuals died, and the psychological community was again asked to explain such violent behavior. A psychologist might decide to interview Columbine students to obtain their perspectives on the factors that motivated the two young men to commit such a horrendous act. A group of ten students has already decided to meet and discuss the events of that day. The psychologist asks if it would be all right to attend the meeting and ask them some questions. The students agree, and the psychologist records their

thoughts. Based on this information, the psychologist concludes that a primary reason for the violent behavior was the peer dynamics in the school that created groups of outcasts.

Critical Questions

1. Who appears to constitute the population of interest?
2. Which type of sampling procedure best describes that used by the psychologist?
3. What are the limitations of this sampling method, and in what specific ways could the sampling method have affected the findings?
4. What specific steps would you have taken to obtain a representative sample?

16. In a simple study about the tea habit in two towns, the following data was observed in a sample of size 100 each.

Town A : 51% person were male, 31% were tea drinkers and 19% were male tea drinkers

Town B : 46% were male, 26% were tea drinkers and 17% were male tea drinkers

Is there any association between sex and tea habits? If so, in which town it is greater?

17. A certain company had four salesmen A, B, C, D each of whom was sent for a month to three types of areas countryside K, outskirts of a city O and shopping Centre of the city S. The sales in hundreds of rupees per month are shown below:

Districts	Salesmen			
	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 and interpret the results.

18. What is χ^2 test? What are its important characteristics?

19. A sample of mark % secured by 10 candidates in an interview was collected at random as follows.

Mark %	50	54	51	58	59	62	42	39	41	44
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Using Chi-Square test find if the above sample has drawn from a population whose variance is 16.

20. How can the frequencies for various attributes be displayed in contingency table ?

(5 x 5 = 25)

PART C

Answer any 3 (10 marks each)

21. What do you mean by Quantitative Techniques? Explain the application of quantitative techniques in business management. Give examples in support of your answer.
22. Rahul an advertising executive is studying the television viewing habit of Mr.Rohit& Mrs. Rohit during prime time hours for one year. Based on the past viewing records, Rahul has determined that during prime time, Mr.Rohit is watching TV 60 percent of time. When Mr.Rohit is watching TV, 40 percent of the time, Mrs.Rohit is also watching. When Mr.Rohit is not watching TV, 30 percent of the time Mrs. Rohit is watching TV. Find the probability that
 - a. If Mrs. Rohit is watching TV, Mr.Rohit is also watching TV.
 - b. Mrs. Rohit is watching TV in prime time.

23. Four brands of flashlight batteries are to be compared by testing each brand in five flashlights. Twenty flashlights are randomly selected and divided randomly into four groups of five flashlights each. Then each group of flashlights uses a different brand of battery. The lifetimes of the batteries, to the nearest hour, are as follows.

Brand A	Brand B	Brand C	Brand D
42	28	24	20
30	36	36	32
39	31	28	38
28	32	28	28
29	27	33	25

Preliminary data analyses indicate that the independent samples come from normal populations with equal standard deviations. At the 5% significance level, does there appear to be a difference in mean lifetime among the four brands of batteries?

24. A vehicle manufacturer wishes to test the ability of three types of steel-alloy panels to resist corrosion when three different paint types are applied. Three panels with differing steel-alloy composition are coated with three types of paint. The following coded data represent the ability of the painted panels to resist weathering.

Paint Type	Steel- Alloy- 1	Steel-Alloy-2	Steel-Alloy-3
1	40	51	56
2	54	55	50
3	47	56	50

Use a two-way ANOVA procedure to determine whether any difference in the ability of the panels to resist corrosion may be assigned to either the type of paint or the steel-alloy composition of the panels

25. "A sample of 300 students of undergraduate and 300 students of Post-graduate in a University were asked to give their opinion towards the autonomous colleges. 190 of the undergraduate and 210 of the post graduate students favoured the autonomous status". Present the above fact in the form of a frequency table and test, at 5%, the opinions of under graduate and post-graduate students on autonomous status of colleges are independent. (Table value of χ^2 at 5% level for d.f. is 3.84).

(10 x 3 = 30)