

Exam. Code : 217601

Subject Code : 5625

M.Com. 1st Semester (Batch 2021-23)

STATISTICAL ANALYSIS FOR BUSINESS

Paper—MC-102

Time Allowed—3 Hours]

[Maximum Marks—60

Note :— Attempt **FIVE** questions in all, selecting at least **ONE** question from each section. The fifth question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. (a) A white goods firm wants to launch a new brand of television or a refrigerator. This firm conducted a survey and found that 60% of the households have a television, 65% a refrigerator, 35% both a television and a refrigerator. If a household is randomly selected,
 - (i) What is the probability that the household has either a television or a refrigerator ?
 - (ii) What is the probability that the household has neither a television nor a refrigerator ?
- (b) A corporation has 250 personal computers. The probability that any 1 of them will require repair

in a given week is 0.01. Find the probability that fewer than 4 of the personal computers will require repair in a particular week. Use the Poisson approximation to solve.

2. A researcher suspected that the number of between meal snacks eaten by students in a day during final examinations might depend on a number of tests a student had to take on that day. The accompanying table shows joint probabilities, estimated from a survey.

Number of snacks (Y)	Number of tests (X)			
	0	1	2	3
0	0.07	0.09	0.06	0.01
1	0.07	0.06	0.07	0.01
2	0.06	0.07	0.14	0.03
3	0.02	0.04	0.16	0.04

- Find the probability function of X and hence the mean number of tests taken by students on that day.
- Find the probability function of Y hence the mean number of snacks eaten by students on that day.
- Find and interpret the conditional probability function of Y, given X is equal to 3.
- Are number of snacks and number of tests independent of each other ?

SECTION—B

3. What are Sampling and Non-Sampling Errors ? How can a researcher control them ?
4. What do you understand by Primary Data ? Discuss the various methods by which Primary Data can be collected ? Differentiate between Primary Data and Secondary Data.

SECTION—C

5. What is meant by a Questionnaire ? What are its various types ? Discuss the importance of pre-testing a Questionnaire.
6. What is meant by hypothesis ? Explain the procedure of testing hypothesis for the difference between the means of two related populations (matched samples).

SECTION—D

7. In light of recent large corporation bankruptcy auditors are becoming increasingly concerned about the possibility of fraud. Auditors might be helped in determining the chances of fraud if they carefully measure cash flow. To evaluate this possibility, samples of mid-level auditors from CPA firms were presented with cash flow information from a fraud case, they were asked to indicate the chance of material fraud on a scale from 0 to 100. A random sample of 36 auditors used the cash-flow information. Their mean assessment was 36.21, and the sample standard deviation was

22.93. For an independent random sample of 36 auditors not using the cash-flow information, the sample mean and standard deviation were respectively 47.56 and 27.56. Assuming that the two population distributions are normal with equal variances, test against a two-sided alternative the null hypothesis that the population means are equal.

8. Use the following data to perform one-way ANOVA :

Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
115	122	113	110	121
118	120	115	115	117
119	122	110	117	120
112	123	119	118	121
110	125	122	120	122
	123		121	123
			122	

Use $\alpha = 0.05$ to test the hypotheses for the difference in means.