M.Com. 1ˢᵗ Semester

STATISTICAL ANALYSIS FOR BUSINESS

Paper—MC-102

Time Allowed—Three Hours]   [Maximum Marks—60

Note :— Attempt **five** questions, selecting at least **one** question from each Section. The 5th question may be attempted from any Section. Each question carries **12** marks.

SECTION—A

1. (a) There are two bags. The first bag contains 5 white and 3 black balls and the second contains 3 white and 5 black balls. One ball is drawn at random from the first bag and is put into the second bag without noting its color. Then one ball is drawn from the second bag. Find the probability that it is white ball.

   (b) Three fair coins are tossed. Find the probability of all getting tails if it is given :

      (i) exactly one of the coins show tail

      (ii) at least two coins show tail.

2. (a) Find the probability that the value of an item drawn at random from a normal distribution with mean 20 and standard deviation 10 will be between (a) 10 and 15 (b) 15 and 25 :

Given z-values	:	0.5	1.0
Area under Normal curve	:	0.1915	0.3413
Given z-values	:	1.5	2.0
Area under Normal curve	:	0.4332	0.4772

   (b) Fit a Binomial distribution to the following data :

X	0	1	2	3	4	Total
f	28	62	46	10	4	150

SECTION—B

3. (a) Under what circumstances stratified random sampling design is considered appropriate ? How would you select such sample ? Explain by means of an example.

   (b) Discuss and compare the Convenience and purposive sampling.

4. (a) Differentiate between Observation and Questionnaire method of data collection.

(b) Explain why we need to draw random samples and how such samples are drawn. What are the properties of a (simple) random sample ?

SECTION—C

5. Briefly describe the important parametric tests used in context of testing hypotheses. How such tests differ from non-parametric tests ? Explain.

6. Commerce Department, GNDU Amritsar is planning to launch a Post graduate programme in Retail Management. Please develop a questionnaire to know the perception of prospective students for this course.

SECTION—D

7. (a) Compute Karl Pearson's Coefficient of Correlation from the following data :

Age (X)	:	52	58	45	36
Blood Pressure (Y)	:	62	53	51	25
Age (X)	:	72	65	47	25
Blood Pressure (Y)	:	75	41	60	33

(b) Differentiate between the Partial Correlation and Multiple Correlation Coefficient.

8. From the population of 4 cities, random samples of sizes given below were taken and the number of high buyers and low buyers recorded. Do the data indicate any significant relationship between the cities and their buying behavior ?

City	A	B	C	D	Total
High Buyers	137	164	152	147	600
Low Buyers	32	57	56	35	180
Total	169	221	208	182	780

Given Chi sq value of $\alpha = 5\%$: for degree of freedom 1 = 3.84, for degree of freedom 2 = 5.99 and for degree of freedom 3 = 7.84.