

MASTER OF BUSINESS ADMINISTRATION**Subject: Statistical Analysis****Subject Code: MAN802****Semester: First****February 2022****Theory (External): 70 Marks****Time: 03 Hours**

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 2 marks.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 10 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number											

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SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x2=20 Marks)

Short/objective answer type question

- A. What is class-interval?
- B. What is relationship between A.M., G.M. and H.M.?
- C. What is relationship between mean, median, and mode?
- D. Karl Pearson's regression formula.
- E. Spearman's rank correlation formula
- F. Brief discussion about Bayes' theorem
- G. Error type
- H. Sample space
- I. Hypothesis
- J. Bivariate

SECTION –B (ESSAY TYPE QUESTIONS)
(5x10=50 Marks)

1. Calculate Median, Quartiles, 6th decile and 70th percentile from the following data:

Marks less than:	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of students:	5	8	7	12	28	20	10	10

2. Calculate Karl Pearson's Coefficient of Skewness from the following data:

Variable	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	2	5	7	13	21	16	8	3

3. The following table gives the distribution of production and also the relatively defective items among them, according to size groups. Is there any correlation between size and defect in quality?

Size Group	15-16	16-17	17-18	18-19	19-20	20-21
No. of items	200	270	340	360	400	300
No. defective items	150	162	170	180	180	120

4. Calculate the correlation coefficient from the following results:
 $N=10$, $\sum X=200$, $\sum Y=225$, $\sum(X-10)^2=1100$, $\sum(Y-15)^2=1200$ and $\sum(X-10)(Y-15)=850$ find coefficient. Also find the regression line X on Y and Y on X.
5. In box, there are 5 red, 3 blue, and 2 white balls. These balls are chosen randomly with replacement. Find the probability that:
- All three balls are red
 - No ball is red
 - At least one ball is red
 - Balls are either red or blue.
6. The probability of X, Y and Z becoming managers are $\frac{4}{9}$, $\frac{2}{9}$, and $\frac{1}{3}$ respectively. The probability, that the Bonus scheme will be introduced if X, Y and Z becoming manager are $\frac{3}{10}$, $\frac{1}{2}$ and $\frac{4}{5}$ respectively.
- What is probability that bonus scheme will be introduced?
 - If the bonus scheme has been introduced, what the probability that the manager appoint was X?

7. (a) Weights In Kg of 10 students are given below:

38,40,45,53,47,43,55,48,52,49

Can we say that variance of the distribution of weight of all students from which the above sample of 10 students was drawn, is equal to 20 kgs? Test this at 5% and 1% levels of significance. (At 9 d.f., chi square $_{0.05}$ = 16.92, chi square $_{0.01}$ = 21.67 at 10 d.f: chi square $_{0.05}$ = 18.31, chi square $_{0.01}$ = 23.21)

(b). In an experiment on peas breeding, Mendal obtained the following frequencies of seeds: 315 round and yellow, 101 wrinkled and yellow, 108 round and green, 32 wrinkled and green. According to his theory of heredity the numbers should be in proportion 9:3:3:1. Is there any evidence to doubt this theory at 5% level of significance? (At 3 d.f., chi square $_{0.05}$ = 7.82)

8. Three varieties A, B and C of wheat are sown in four plots each and the following yield per acre were obtained.

Plots	Varieties		
	A	B	C
1	8	7	12
2	10	5	9
3	7	10	13
4	14	9	12
5	11	9	14

Is there any significant difference in the production of three varieties?

====END OF PAPER====