

- (c) What is correlation? Distinguish between correlation and regression. Explain the implications of positive and negative correlation. Show by means of scatter diagram the presence of perfect positive and perfect negative correlation.

[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5347

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Name of the Paper : Statistics for Business (GE)

Name of the Course : **B.A. (H) Business Economics**

Semester : II / IV / VI

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **all** questions. Choice is available within each question.
3. Use of simple calculator is permitted.

1. Attempt any **three** : (6×3)

(a) Convert the following distribution into “more than” frequency distribution :

Weekly Wages “less than” (Rs)	20	40	60	80	100
Number of workers	41	92	156	194	201

(b) An investor buys Rs. 1500 worth of shares of a company each month. During the first four months he bought the shares at a price of Rs. 10, Rs. 15, Rs. 20 and Rs. 30 per share. What is the average price paid for the shares bought during these four months. Verify your result by using appropriate average.

(c) If the first quartile is 48 and quartile deviation is 6, find the median assuming the distribution to be symmetrical.

(d) Define Geometric mean. Explain the merits and demerits of Geometric Mean.

On subsequent verification it was discovered that the pair (X=11, Y=4) was copied wrongly, the correct values being (X=10, Y=14). After making necessary correction, find

(i) The two regression coefficients

(ii) The two regression equations and

(iii) The correlation coefficient

(b) A sample of 8 students of B.Com 1st year was taken and their marks in mathematics in class X and XII were noted :

Class X	85	92	71	90	81	94	62	73
Class XII	71	90	75	84	90	70	70	66

From the above data calculate covariance and interpret the result.

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(b) Explain the time reversal test and factor reversal test. Prove that Fisher's ideal index number satisfies both these test.

(c) From the following data, construct index numbers using i) 2019 as base and ii) chain base method

Year	2019	2020	2021	2022	2023	2024
Price	200	240	250	260	280	300

5. Attempt any **two** : (9×2)

(a) In order to find the correlation between two variables X and Y from 12 pairs of observations, the following calculations were made:

$$\sum X=30 \quad \sum X^2=670 \quad \sum Y=5 \quad \sum Y^2=285 \quad \sum XY=344$$

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2. Attempt any **three** parts : (6×3)

(a) A box contains 4 blue and 3 green balls. One ball is drawn at random and in its place a ball of the other colour is put in the box. Now one ball is drawn at random from the box. Find the probability that it is blue.

(b) An insurance company insured 2000 motorcycle drivers, 4000 taxi drivers and 6000 scooter drivers. The probability of their accident is 0.1, 0.3 and 0.2 respectively. One of the insured persons meets with an accident. What is the probability that he is a motorcycle driver?

(c) State the addition and multiplication theorem of probability with an example of each case.

(d) If the probability that an individual suffers a bad reaction from an injection of a given serum is 0.001, determine the probability that out of 2000

individuals : i) exactly 3 and ii) more than two individuals will suffer a bad reaction. [use $e^{-2} = 0.135$]

3. Attempt any **three** parts: (6×3)

(a) In a sample of 1000 items, the mean weight and standard deviation are 50 and 10 kg respectively. Assuming the distribution to be normal, find the number of items weighing between 40 and 70 kg.

(b) A random sample of 400 items gives the mean 4.45 and the variance as 4. Can the sample be regarded as drawn from a normal population with mean 4? (At 5% level of significance)

(c) Distinguish between i) Null Hypothesis and Alternative Hypothesis ii) Two tailed test and one tailed tests.

(d) The marks obtained in certain examination follow normal distribution with mean 45 and standard deviation 10. If 1000 students appeared at the examination. Calculate the number of students scoring i) less than 40 marks ii) more than 60% marks.

4. Attempt any **two** : (9×2)

(a) From the following data, compute quantity index number for the current year by applying

(i) Laspeyre's Method

(ii) Paasche's Method

(iii) Fisher's Index Method

Commodity	Base Year		Current Year	
	Price(Rs)	Quantity (Kg)	Price(Rs)	Quantity (Kg)
A	1	6	5	8
B	2	7	4	7
C	3	8	3	6
D	4	9	2	5