

B.Com(H) CBCS V Semester Examination November/December 2020

BCOM(H) Sem V- Business Statistics

Paper Code- 22417511 - CBCS

Max Marks 75

Attempt any four Questions. Each Question carries equal marks.

Use of Simple Calculators is allowed.

Q.1 Discuss the mathematical properties of mean. What is the empirical relationship between mean, median and mode? Compute Arithmetic Mean, Standard Deviation and Karl Pearson's Coefficient of Skewness for the following data:

Class- Interval	Frequency
130-134	3
135-139	12
140-144	21
145-149	28
150-154	19
155- 159	12
160-164	5
Total	100

Q.2 "Correlation always signifies cause and effect relationship among variables but regression does not" Do you agree?

For 10 observations on price (P) and supply (S) the following data were obtained

$$\sum P = 130 \quad \sum S = 220 \quad \sum P^2 = 2288 \quad \sum S^2 = 5506 \quad \sum PS = 3467 \quad N = 10$$

Compute the two regression coefficients. Obtain the line of regression of S on P and estimate the supply when the price is 16 units and find out the standard error of estimate.

Q. 3 Define Poisson distribution and state the conditions under which this distribution is used.

Fit a poisson distribution to the following data: Given: $e^{-6.1} = 0.5432$

Number of mistakes per page	0	1	2	3	4
Number of pages on which mistakes occurred	109	65	22	3	1

Q.4 Discuss why Fisher's Index Number is called an ideal index number. The following data relates to the prices and quantities of 4 commodities in the years 2012 and 2013. Construct the following index numbers of price for the year 2013 using 2012 as the base year. i. Laspeyre's Index number ii. Paasche's Index number

iii. Dorbish and Bowley's Index number iv. Fisher's Ideal index number

Commodity	2012		2013	
	Price(Rs.)	Quantity	Price(Rs.)	Quantity
A	5	100	6	150
B	4	80	5	100
C	2.5	60	5	72
D	12	30	9	33

Q. 5 What are the main components of time series? Why is there a need to analyze time series?

Fit a second degree parabolic curve to the following data and find the profit for 2007 and 2016

Year	2008	2009	2010	2011	2012	2013	2014
Profi (Rs. in crores)	0	72	75	65	80	85	95

Q. 6 Explain different approaches of probability. How is priori probability different from posterior probability?

A company produces electrical components utilizing three non-overlapping work shifts. It is observed that 50 %, 30 % and 20 % of the components are produced during shift 1, 2 and 3 respectively. Furthermore, 6 %, 10 % and 8 % components produced in shift 1, 2 and 3, respectively are defective. Determine:

- i. What percentage of all components is defective?
- ii. Given that a defective component is found, what is the probability that it was produced from shift 3?