

## Faculty of Commerce

## B.Com. II-Year, CBCS - IV Semester Regular Examinations -June/July, 2022

(For All Streams of B.Com)

## PAPER: Business Statistics-II

Time: 3 Hours

Max Marks: 80

## Section-A

I. Answer any five of the following (5x4=20 Marks)

- Simple and Multiple Regression
- From the following data, construct an Index number for 2001 taking 2000 as baseyear, as per simple Aggregative method.

Commodities	Price in 2000 (Rs)	Price in 2001 (Rs)
p	30	55
Q	65	90
R	85	120
S	45	40
T	20	35

- Fit a freehand smooth curve representing the following data:
 

Year	2000	2001	2002	2003	2004	2005	2006
Sales(In Lakhs)	10	17	25	35	40	42	46
- Find the Probability when one card is drawn from a set of standard pack of Card (i) That is King (ii) That is Diamond
- The mean of a binomial distribution is 4 and its standard deviation is 3. What are the values of n, p and q?
- Given the two regression coefficients  $b_{xy} = 0.4$  and  $b_{yx} = 0.9$ , Calculate the value of correlation Coefficient
- Secular Trend
- Factor Reversal Test

## Section-B

II. Answer the following questions (5x12=60 Marks)

- (a) Explain Significance and Limitations of Regression.

(OR)

- (b) From the following data, obtain the two regression lines.

X	2	6	8	11	13	15	13	14
Y	8	6	10	12	12	14	14	20

- (a) Explain the importance and Limitations of Index Numbers.

(OR)

- (b) Compute Fishers index from the data given below and test whether they satisfy Time Reversal Test.

Commodity	P0	Q0	P1	Q1
A	5	10	4	12
B	8	6	7	7
C	6	3	5	4
D	7	6	6	5

- (a) Explain the Components of Time Series.

(OR)

- (b) Following information given about the production (in thousand tons) of a sugar factory. Fit a straight-line trend by the method of least squares and show trend values

Year	: 2015	2016	2017	2018	2019	2020	2021
Sales	: 85	92	10	58	95	105	95

12. (a) Explain the addition theorem and multiplication theorem of Probability.

(OR)

- (b) A bag contains 25 tickets marked with numbers 1 to 25. One ticket is Drawn at random. Find the probability that it will be a multiple of (i) 2 or 5 (ii) 3 or 5 (iii) 2 and 5.

13. (a) Explain the properties of Normal Distribution Curve

(OR)

- (b) It is known from past experience that in a certain plant, there are on an average, 4 industrial accidents per year. Find the probability that in a given year, there will be less than 4 accidents. Assume Poisson Distribution ( $e^4 = 0.0183$ )

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## Faculty of Commerce

## B.Com. II-Year, CBCS - IV Semester Backlog Examinations -Jan, 2023

(For All Streams of B.Com)

## PAPER: Business Statistics-II

Time: 3 Hours

Max Marks: 80

## Section-A

I. Answer any *five* of the following questions (5x4=20 Marks)

1. Calculate the coefficient of regression from data given below

Particulars	Series - X	Series - Y
Average	25	22
Standard deviation	4	5

2. Uses of index numbers.

3. Cyclical variations.

4. What is the probability of drawing a king and queen consecutively from a deck of 52 cards, without replacement?

5. Properties of binomial distribution

6. State the types of regressions

7. From the data given below, compute the index number of 2015 using weighted aggregative method.

Article	2012		2015	
	Price	Quantity	Price	Quantity
Rice	10	20	8	24
Wheat	16	12	14	14
Dal	12	6	10	8
Fish	6	20	4	16
Meat	8	4	12	4

8. Define Probability.

## Section-B

II. Answer the following questions (5x12=60 Marks)

9. (a) Calculate the following from the below given data:

(i) The two regressions equations (ii) The coefficient of correlation

Marks in economics	25	28	35	32	31	36	29	38	34	32
Marks in statistics	43	46	49	41	36	32	31	30	33	39

(OR)

(b) Write the differences between correlation and regression.

10. (a) Define index numbers? Explain the types of index numbers?

(OR)

(b) Compute Fisher's Ideal Index number from the data given below. Ensure that it satisfies factor Reversal test?

Item	Base year		Current Year	
	Quantity	Price (Rs.)	Quantity	Price (Rs.)
A	12	10	15	15
B	15	8	20	6
C	25	7	22	10
D	10	15	12	15

11. (a) Define time series analysis and explain the importance of time series?  
(OR)

(b) Below is given the figures of production (million tons) of a sugar factory. Fit the straight-line trend to these figures under least square methods and predict production volume for the year 2012?

Year	2003	2004	2005	2006	2007	2008	2009
Production (tons)	80	90	92	83	94	99	97

12. (a) A card is drawn from a well shuffled pack of 52 cards with replacement. Find the probability of:

- (i) A heart king                      (ii) A jack card                      (iii) A card of diamond  
(iv) A king or a queen              (v) A black card                      (vi) An ace

(OR)

(b) Two sets of candidates are competing for the positions on the board of directors of company. The probabilities that the first and second sets will win are 0.6 and 0.4 respectively. If the first set wins, the probability of introducing a new product is 0.8, and the corresponding probability if the second set wins is 0.3. What is the probability that the new product will be introduced?

13.(a) Explain the importance of Poisson distribution?

(OR)

(b) Nine coins were tossed at a time 512 times. Number of heads observed at Each throw is recorded and the results are given below.

No. of Heads	0	1	2	3	4	5	6	7	8	9
Frequency	4	10	45	115	139	105	65	19	8	2

Find the expected frequencies. Calculate arithmetic mean, standard deviation under Binomial Distribution. These values compare with actual frequencies.

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 (For All Streams of B.Com)  
**PAPER: Business Statistics-II**

Time: 3 Hours

Max Marks: 80

**Section-A**I. Answer any *five* of the following questions (5x4=20 Marks)

1. What is Regression
2. Explain Circular test
3. Explain Deseasonalisation of data
4. What is Experiment and Event
5. What is Central limit theorem
6. If the regression coefficients are 0.8 and 0.6, what would be the value of coefficient of correlation
7. On the basis of following information, calculate Laspeyre's and Paasche's price index number  
 $\Sigma P_1Q_1=217$ ,  $\Sigma P_0Q_1=190$ ,  $\Sigma P_0Q_0=184$  and  $\Sigma P_1Q_0=190$
8. In certain college, 50 students play Cricket, 20 play Tennis and 10 Play both. How many students play atleast one game

**Section-B**

II. Answer the following questions (5x12=60 Marks)

9. (a) What is Linear and Non Linear regression? Explain correlation v/s regression (OR)

(b) Given the bivariate data

X	2	6	4	3	2	2	8	4
Y	7	2	1	1	2	3	2	6

- (i) Fit the regression line of Y on X and hence predict Y, if X=20  
 (ii) Fit the regression line of X on Y and hence predict X, if Y=05

- 10.(a) Define Index Number? explain its Uses and Types (OR)

(b) From the following data calculate

- (i) Marshal – Edgeworth (ii) Fisher's Ideal Price Index Numbers

Commodity	Price 2010	Quantity 2010	Price 2020	Quantity 2020
A	20	8	40	6
B	50	10	60	5
C	40	15	50	15
D	20	20	20	25

- 11.(a) What is Time series? Explain various Components Time series (OR)

(b) Fit a straight line trend by the method of least squares and estimate the production in 2015

Year	2006	2007	2008	2009	2010	2011	2012
Production (in '000 tonnes)	80	90	92	83	94	99	92

- 12.(a) Explain the Basics of Set Theory (OR)

(b) Two cards are drawn one after the other from a pack of 52 cards. What is the probability that they are Ace and a Queen:

- (i) With replacement (ii) Without replacement

- 13.(a) Explain the importance and properties of the Normal Distribution (OR)

(b) Assuming that the typing mistakes per page committed by a typist follow a poisson distribution. Find the expected frequencies for the following distribution of typing mistakes:

No. of mistakes per page	0	1	2	3	4	5
No. of pages	10	30	20	15	10	5

(Given  $e^{-m}=0.223$ )

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