



AC-4623

**B. Com. - LL. B. (Hons.) (Five Year Inte. Course)**  
**(Sem. II) Examination**  
**April / May - 2015**  
**Mathematics & Statistics : Paper - II**

Time : 3 Hours]

[Total Marks : 70

**Instructions :**

(1)

नीचे दृष्टावेद निशानीवाणी विगतो उत्तरवही पर अवश्य लिखवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. Com. - LL. B. (Hons.) (Five Year Inte. Course) (Sem. II)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Mathematics &amp; Statistics : Paper - II"/>	<input type="text"/>
Subject Code No. : <input type="text" value="4"/> <input type="text" value="6"/> <input type="text" value="2"/> <input type="text" value="3"/>	<input type="text"/>
Section No. (1, 2,.....) : <input type="text" value="Nil"/>	<input type="text"/>
	Student's Signature

- (2) Figures to the right indicate full marks of the questions.  
(3) Statistical tables and graph papers would be supplied on request.  
(4) Simple calculator would be allowed.

1 Answer the following questions : (any four) 10

- (1) If the regression line of  $x$  on  $y$  is,  $x = 4y + 7$  and if the variance of  $x$  is 25 times more than the variance of  $y$ , then find the value of the coefficient of correlation.
- (2) If  $\sum p_1q_1 = 500$ ,  $\sum p_0q_0 = 300$ , Paasche's I.N. = 300, Dorbish and Bowley's I.N. = 290, then calculate Marshall - Edgeworth's I.N.
- (3) In a binomial distribution if mean = 20 and S.D. = 2 then find its parameters.
- (4) For a Poisson distribution if  $\frac{1}{3}p(x=1) = p(x=4)$  then find the value of its variance.
- (5) The mean of the Normal distribution is 600 and 16% of the total values are greater than 700, then find the value of S.D.

- 2 (a) What is Bernoulli's trials ? State the properties of Normal distribution. 5
- (b) A balanced coin is tossed 900 times, then find the probability of getting the no. of head 6
- (i) between 435 and 465
- (ii) between 450 and 480.
- (c) In a book on average there are two misprints in five pages. Using Poisson distribution, find the no. of pages having at the most 3 misprints in that book of 200 pages.  $[e^{-2} = 0.13534, e^{-0.4} = 0.6703]$  4

**OR**

- 2 (a) In which condition binomial distribution follows normal distribution ? State the properties of binomial distribution. 5
- (b) The marks of the 500 students of a college is distributed normally. If the average marks of the students is 52 and S.D. = 8, then obtain the probability that in a group of 6 students of that college, 2 students would get more than 60 marks. 5
- (c) For a Poisson variate  $x$ , if the value of the parameter is 4, then find  $p(x > 0/x < 2)$ . 5

$$[e^{-4} = 0.01832, e^{-2} = 0.13534]$$

- 3 (a) What is forecasting ? State the assumptions of forecasting. Also state the limitations of forecasting. 7
- (b) By taking the initial forecast as 100 and  $\alpha = 0.4$ . Forecast the profit for the given years by the exponential smoothing method. 8

Year :	2006	2007	2008	2009	2010	2011
Profit in thousand Rs.	100	150	165	180	195	225

**OR**

- 3 (a) Explain the methods of forecasting. 7  
 (b) Explain Industry V/s Company sales forecasts and explain the factors affecting company sales. 8

- 4 (a) State the limitations of Karl-Pearson's coefficient of correlation. Also state the utility of the study of Regression. 5  
 (b) Calculate the Karl-Pearson's coefficient of correlation for the following bivariate data : 7

Income	400	400	600	600	800	800	1000	1000
Savings	50	100	100	150	150	200	150	200
Frequency	8	4	12	24	17	10	10	15

- (c) The coefficient of correlation between two variables is 0.72. If one regression coefficient is three times more than other regression coefficient, then obtain both the regression coefficients. 3

**OR**

- 4 (a) Why the regression lines are two only ? Also state the properties of regression coefficients. 6  
 (b) Obtain the regression line of  $x$  on  $y$  for the following data : 4

$$n = 25, \Sigma x = 125, \Sigma y = 100, \Sigma x^2 = 650, \Sigma y^2 = 436, \Sigma xy = 520.$$

- (c) Calculate the value of coefficient of correlation. Find probable error and also obtain the confidence limits for the population coefficient of correlation.  $n = 10, \Sigma x = 110,$  5

$$\Sigma y = 150, \Sigma x^2 = 1332, \Sigma y^2 = 2410, \Sigma xy = 1775.$$

- 5 (a) Explain Deflating and Splicing. 5  
 (b) Calculate the Fisher's quantity index no. for the following data : 5

Commodity	Year 2008		Year 2012	
	Price	Expenditure	Price	Expenditure
A	5	50	4	48
B	8	48	7	49
C	6	18	5	20

- (c) A textile worker in the city of Surat earns Rs. 3500 per month. The cost of Living Index No. for a particular month is given as 1360. By using the following data, find out the amounts he spends on house rent and clothing. 5

Group	Expenditure	Group Index
Food	1400	180
Clothing	?	150
House rent	?	100
Fuel	560	110
Miscellaneous	630	80

**OR**

- 5 (a) What is Index No. ? State the characteristics of Index No. Also state the limitations of I.N. 6
- (b) Prepare consumer price Index No. from the following data for the years 2010 and 2011 by taking the year 2008 as base year : 5

Commodity	2008	2010	2011
A	20.00	24.00	21.00
B	1.25	1.50	1.00
C	5.00	8.00	8.00
D	2.00	2.25	2.12

- (c) During a certain period the cost of living Index No. goes up from 110 to 200 and the salary of the worker is also raised from Rs. 325 to Rs. 500. Does the worker really gain ? And if so, by how much in real terms? 4