

B.C.C.A.- II (CBCS Pattern) Semester-IV  
**UBCCAT401 - Statistics Techniques and Business Mathematics-II**

P. Pages : 2

Time : Three Hours



**GUG/W/24/12045**

Max. Marks : 80

- Notes : 1. All questions are compulsory.  
 2. All questions carry equal marks

1. a) What is Regression? How important in business. 8  
 b) Equations of the two lines of regression are 8  
 $2x+3y=7$  and  $5x+4y=9$  Find.  
 a) Mean of x and Mean of y  
 b) Regression coefficients  $b_{xy}$  and  $b_{yx}$   
 c) Correlation coefficient between x and y

**OR**

- c) Find the two lines of regression from the following data: 16

Age of husband	25	22	28	26	35	20	22	40	20	18
Age of Wife	18	15	20	17	22	14	16	21	15	14

Hence estimate :

- i) The age of husband when the age of wife is 19 and  
 ii) The age of wife when the age of husband is 30.

2. a) Given data 8  
 $\sum p_0q_0 = 970$      $\sum p_1q_1 = 850$   
 $\sum p_0q_1 = 1200$      $\sum p_1q_0 = 520$

Calculate :- i) Laspeyr's Method    ii) Paasche's Method

- b) Find out Index number by Dorbish and Bowley's method 8

Commodity	2010		2023	
	Price	Quantity	Price	Quantity
Rice	30	80	40	110
Wheat	25	60	35	120
Jawar	20	40	25	70
Bajra	35	100	38	150

**OR**

- c) Find out Index Number by all method. 16

- 1) Laspeyre's Method    2) Paasches method  
 3) Dorbish & Bowley's method    4) Fisher's Ideal Index Number

Article	2010		2023	
	Price	Quantity	Price	Quantity
A	5	10	7	12
B	7	12	9	14
C	4	14	6	13
D	8	11	12	12
E	2	9	5	10

3. a) Random sample of 500 villages was taken from Chandrapur district & the average population per village was found to be 720 with a standard deviation of 150. Another random samples of villages from the same district gave an average population of 780 per village with a standard deviation of 60. If the difference between the average of two sample statistically significant 8
- b) The following information was obtained in a sample survey of 100 credit cooperative societies. 8

	Societies in		
	Urban area	Rural area	Total
Run by politicians	34	31	65
Run by local person	13	22	35
Total	47	53	100

Can it be said that there are relatively more local person running the societies in rural areas than urban area? 5% level of significance value of  $\chi^2$  for 1 d.f. is 3.84.

**OR**

- c) Raj company wishes to test whether its three salesmen A, B and C tend to make sale of the same size whether they differ their selling ability as measured by the average size of their sale during the last week they have been 21 sales calls. A made 11 calls, B made 10 calls and C made 5 calls following are the weekly sales records of the three salesmen 16

A (Rs)	B (Rs)	C (Rs)
9	12	13
10	9	9
9	9	10
10	10	12
0	Nil	11

Perform the analysis of variance and draw your conclusion. Table value of F at 5% level is 1.83.

4. a) A mixture of 120 litre of Acid and water contains 15% of water. How much water must be added to make water 43% of the resulting mixture. 8
- b) Population of Bramhapuri at the end of 2001 was 54000. Assuming the population growth at 6% p.a. Estimate the population of Bramhapuri at the end of 2012. 8

**OR**

- c) Annual Income ratio of A and B is 4:3 and Annual expenditure ratio is 3:2. If A saves Rs. 600 and B saves Rs. 800 at the end of the year. Find out 8
- i) Their Annual Income                      ii) Their Annual Expenditure.
- d) Find the principal for which the difference of simple interest and compound interest for 5 year Rs. 50 at 6% p.a. 8

5. Short Note.

- a) Types of regression. 4
- b) Types of Index Number. 4
- c) Importance of chi-square test. 4
- d) Distinguish between simple interest and compound interest. 4

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