

B.B.A. - I CBCS Pattern Semester-II  
**UCB2C07 - Statistical Methods for Business-II**

P. Pages : 2

Time : Three Hours



**GUG/W/23/10595**

Max. Marks : 80

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

1. a) What is regression? Explain the importance of regression. **8**  
b) You are given below the following information about advertising and sales. **8**

	Adv. Exp (X) (Rs. Lakhs)	Sales (Y) (Rs. Lakhs)
Mean	10	90
S.D.	3	12

Correlation Coefficient = 0.8

- a) Calculate the two regression lines  
b) Find the likely sales when advertisement expenditure is Rs. 15 lakh.  
c) What would be the advertisement expenditure if company wants to attain a sale target of Rs. 120 lakh?

**OR**

- c) Two lines of regression are given as under: **16**  
 $6x + 10y - 119 = 0$   
 $-30x + 45y + 180 = 0$   
The variance of Y IS known to be 4.  
Find  
i) The mean values of X and Y.  
ii) The coefficient of correlation between X and Y.  
iii) The variance of X.

2. a) Calculate 3 yearly moving average or trend value for the following data: **8**

Year (x)	1953	1954	1955	1956	1957	1958	1959	1960
Values (y)	3	5	7	10	12	14	15	16

- b) Compute the 4-yearly moving averages from the following data: **8**

Year	1991	1992	1993	1994	1995	1996	1997	1998
Annual Sales (Rs. 10 crores)	36	43	43	34	44	54	34	24

**OR**

- c) Below are given figures of production (In thousand Pound) of sugar factory. **16**

Year	2017	2016	2017	2018	2019	2020	2021
Production (In thousand pound)	80	90	92	83	94	99	92

Find out:

- i) Is there rising trend or failing trend.  
ii) Show the trend line  
iii) Find out production for the year 2022 by at least method.

3. a) Calculate the value of  $X^2$  and determine that intelligent fathers have intelligent sons. 8
- Intelligent fathers with intelligent sons 372  
 Intelligent fathers with dull sons 122  
 Dull fathers with intelligent sons 138  
 Dull fathers with dull sons 868  
 ( $X^2=3.841$  for 5% at 1 d.f.)

- b) Suppose that in a public opinion survey answer to the question. 8
- a) Do you drink  
 b) Are you in favour of local option or sale of liquor were tabulated as below

Question			
Question	Yes	No	Total
Yes	56	32	88
No	18	6	24
Total	74	38	112

Can you infer that opinion is dependent on whether or not an individual drinks? Table value of  $X^2$  for one degree of freedom at 5% level of significance is 3.841.

**OR**

- c) Out of 8000 graduates in a town, 800 are females, out of 1600 graduates employed, 120 are female, Use  $X^2$  at 5% level of one degree of freedom is 3.841. 16
4. a) What is the chance that a year 1985 in the month of March should have 5<sup>th</sup> Sunday? 8
- b) A bag contain 4 white, 2 black, 3 yellow and 3 red balls what is the probability of getting a white or red ball at random in a single draw of one. 8

**OR**

- c) A Cards is drawn from a pack of cards. Find the probability that it is. 8
- a) A black card b) A red card  
 c) A club d) An ace  
 e) A red ace f) An ace of spade  
 g) Not a spade h) A king or a queen
- d) It is 8:5 against a person who is now 40 year old living till he is 70 and 4:3 against a person now 60 years living till he is 80. Find the probability that one at least of these person will be alive 30 year. 8
5. Write short note:
- a) Utility of regression. 4  
 b) Components of Time series. 4  
 c) Characteristics of  $X^2$  test. 4  
 d) Theoretical distribution. 4

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