



G-3735

Second Year B. C. A. (Sem. III) (CBCS) Examination

November / December - 2014

301 : Statistical Methods

Time : Hours]

[Total Marks :

Instructions :

(1)

नीचे दशांशके निशानीवाणी विगतो उत्तरवही पर अवश्य बंधनी. Fillup strictly the details of signs on your answer book.	Seat No.:
Name of the Examination :	<input type="text"/>
SECOND YEAR B. C. A. (SEM. III) (CBCS)	<input type="text"/>
Name of the Subject :	<input type="text"/>
301 : STATISTICAL METHODS	<input type="text"/>
Subject Code No. : <input type="text"/> 3 <input type="text"/> 7 <input type="text"/> 3 <input type="text"/> 5	Section No. (1, 2,.....) : <input type="text"/> Nil
Student's Signature	

- (2) All the questions are compulsory.
- (3) Figures to the right indicate full marks.
- (4) Mention your options clearly.

1 Do as directed : (any seven) 14

- (1) Compute the mean from the following data :
80, 84, 88, 83, 86, 84, 87
- (2) In the rank correlation coefficient, if $\sum d^2 = 0, P =$ _____.
- (3) $b_{yx} = 1.17, S_x^2 : S_y^2 = 9.81$, find r and b_{xy} .
- (4) If two variables are having ranks in reverse order, write the value of r .
- (5) A regression equation given by $x+5y = 10$, if $x=5$ then find y .
- (6) If covariance between two variables X and Y is 20.25 and Standard Deviation of X and Y are 5 and 4.5 respectively. Calculate correlation co-efficient between X and Y.
- (7) What are the numerical limits of r ? What does it means when r equals one ? Zero ? minus one ?
- (8) What is Standard Deviation ?
- (9) If Mean = 68, Mode = 28.5 and C.V. = 58 then Median = _____.
- (10) What is the measure of Central Tendency ?

2 Attempt any two :

14

- (1) The Human Resource Manager at a city hospital began a study of the Overtime hours of the registered nurses. Fifteen nurses were selected at random and following overtime hours during a month were recorded :
13, 13, 12, 15, 7, 15, 5, 12, 6, 7, 12, 10, 9, 13, 12, 5, 9, 6, 10, 5, 6, 9, 6, 9, 12.
Calculate the arithmetic mean of overtime hours during the month.
- (2) Find the missing frequencies in the following frequency distribution. The A.M. of the given data is 11.09.

Class Interval	Frequency	Class Interval	Frequency
9.3–9.7	2	11.3–11.7	14
9.8–10.2	5	11.7–12.2	6
10.3–10.7	F_3	12.3–12.7	3
10.8–11.2	F_4	12.8–13.2	1

Total of all frequencies is 60.

- (3) A survey was conducted to determine the age (in years) of 120 automobiles. The result of such a survey is as given below :

Age of Auto	0-4	4-8	8-12	12-16	16-20
No. of Autos	13	29	48	22	8

What is the median age for the auttos ?

3 Attempt any two :

14

- (1) The wholesale prices of a commodity for seven consecutive days in a month are as follows :

Day	1	2	3	4	5	6	7
Price/Quintal	240	260	270	245	255	286	264

Calculate the variance and Standard Deviation.

- (2) A study of the ages of 100 persons grouped in to intervals 20-22, 22-24, 24-26,.....revealed the mean age and standard deviation to be 32.02 and 13.18 respectively. While checking, it was discovered that observation 57 was misread as 27. Calculate the correct mean age and standard deviation.

- (3) The weekly sales of two products A and B were recorded as given below :

Product A	59	75	27	63	27	28	56
Product B	150	200	125	310	330	250	225

Find out which of the two shows greater fluctuation in sales.

- 4 Attempt any two :

- (1) The following table gives indices of industrial production and number of registered unemployed people (in lacs) Calculate the value of correlation coefficient.

Year :	1991	1992	1993	1994	1995	1996	1997	1998
Index of Production :	100	102	104	107	105	112	103	99
Nos. of Unemployed :	15	12	13	11	12	12	19	26

- (2) The following table gives the frequency according to the marks obtain by 67 students in an intelligence test. Measure the degree of relationship between age and marks.

Total	Age in years				Total
	18	19	20	21	
Marks					
200-250	4	4	2	1	11
250-300	3	5	4	2	14
300-350	2	6	8	5	21
350-400	1	4	6	10	21
Total	10	19	20	18	67

- (3) Quotations of Index Number of security prices of a certain joint stock company are given below :

Year	Debenture Price	Share Price
1	97.8	73.2
2	99.2	85.8
3	98.8	78.9
4	98.3	75.8
5	98.4	77.2
6	96.7	87.2
7	97.1	83.8

Using the rank correlation method, determine the relationship between debenture price and share price.

5 Attempt any two :

- (1) The owner of a small garment shop is hopeful that his sales are rising significantly week by week. Treating the sales for previous six weeks as a typical example of this rising trend, he recorded them in Rs. ('000) and analysed the results.

Week	1	2	3	4	5	6
Sales	2.69	2.62	2.80	2.70	2.75	2.81

Fit a linear regression equation to suggest to him the weekly rate at which his sales are rising and use this equation to estimate expected sales for the 7th week.

- (2) You are given the following information about advertising expenditure and sales :

	Advertisement (x) (Rs. in lacs)	Sales (y) (Rs. in lacs)
Arithmetic Mean	10	90
Standard Deviation	3	12

Correlation Coefficient = 0.8.

(a) Obtain Two Regression Equation

(b) Find likely sales when advertisement budget is Rs. 15 lacs.

- (3) With the ten observations on price (x) and supply (y), the following data were obtained.

$$\sum x = 130, \sum y = 220, \sum x^2 = 2288, \sum y^2 = 5506, \sum xy = 3467.$$

Obtain the line of regression of y on x and estimate the supply when price is 16 units.