



P-3735

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

March/April – 2014

301 : Statistical Methods

Time : 3 Hours]

[Total Marks : 70

Instructions :

(१)

नीचे दशांशव \leftarrow निशानीवाणी विगतो उत्तरवही पर अवश्य कर्णी.
Fillup strictly the details of \leftarrow signs on your answer book.

Name of the Examination :
Second Year B. C. A. (Sem. III)

Name of the Subject :
301 : Statistical Methods

Subject Code No. : 3 7 3 5 Section No. (1, 2, ...): Nil

Seat No. :

Student's Signature

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

1 Do as directed : 14

- (1) Define mode.
(2) Calculate a mean for the following data
47, 53, 52, 59, 72, 83, 92, 94, 98, 99
(3) A regression equation given by $X+5y=10$. If $X=5$ then find
y.
(4) Interpret the value of correlation coefficient
(i) 0.65
(ii) -0.52
(5) If $\sum d^2 = 0$ then value of correlation coefficient is _____.
(6) If the ranks of two variables are equal then correlation
coefficient $r =$ _____.

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[Contd...

- (7) If two values are perfectly correlated and one regression coefficient is 0.5. Find another regression coefficient.
- (8) If $b_{yx} = 0.52$ and $b_{xy} = 2.5$. Is it true ?
- (9) The value of correlation coefficient is between _____ and _____.
- (10) The standard deviation of a set of 50 observations is 8. If each observation is multiplied by 2, then the new value of deviation is _____.
- (11) In rank correlation if $\sum d^2 = 0$, $r =$ _____.
- (12) The signs of correlation and regression coefficient are same. True / False.
- (13) If $\bar{X} = 169, C.M., \bar{Y} = 67k.g., S_x = 20, S_y = 3, r = 0.5$. Find regression line of X on Y.
- (14) What is the standard deviation of 8, 8, 8, 8 and 8.

2 Attempt any two.

14

- (a) Following is the frequency distribution of the preferred length of Kitchen slabs obtained from the preference study on housewives :

Length (in meters) More than	1.0	1.5	2.0	2.5	3.0	3.5
Preference Housewives	50	48	42	40	10	5

A manufacturer has to take a decision on what length of slabs of Kitchen must be ? What length would you recommend and why ?

- (b) The pass result of 50 students who took a class test is given below.

Marks :	40	50	60	70	80	90
No. of Students	8	10	9	6	4	3

If the mean marks for all the students was 91.6, find out the mean marks of student who failed.

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[Contd...

- (c) The length of time taken by each of 18 workers to complete a specific job was observed to be the following.

Time (in min)	5-9	10-14	15-19	20-24	25-29
No. of workers	3	8	4	2	1

Calculate the median time.

- 3 Attempt any two.

14

- (a) The mean and S.D. of sample of 100 observations were calculated as 40 and 5.1 respectively by a student who took by mistake 50 instead of 40 for one observation. Calculate the correct mean and standard deviation.
- (b) Following figures give the production of non-fatty dry milk during the 12 months of 2012.

Months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
production (million lbs)	83.5	81.6	95.8	111.5	131.4	126.5	98.7	76.2	63.2	60.3	49.6	67.1

Calculate coefficient of variation.

- (c) A group of 100 selected students average 163.8 cm in height with the coefficient of variation of 3.2%, what was the S.D. of their heights.

- 4 Attempt any two.

14

- (a) The following table gives the distribution of items of production and also the relatively defective items among them, according to size groups. Find the correlation coefficient between size and defect in quality :

Size group :	15-16	16-17	17-18	18-19	19-20	20-21
No. of items	200	270	340	360	400	300
No. of defective Items	150	162	170	180	180	114

- (b) Calculate the correlation coefficient from the following bivariate frequency distribution.

Sales Revenue (Rs. in lakhs)	Advertising Expenditure (Rs. in 10000)				Total
	5-10	10-15	15-20	20-25	
75-125	4	1	-	-	5
125-175	7	6	2	1	16
175-225	1	3	4	2	10
225-275	1	1	3	4	9
total	13	11	9	7	40

- (c) An examination of eight applicants for a clerical post was taken by a firm.

From the marks obtained by the applicants in the accounting and statistics paper, compute the rank correlation coefficient.

Applicant:	A	B	C	D	E	F	G	H
Marks in Accountancy	15	20	28	12	40	00	20	80
Marks in Statistics	40	30	50	30	20	10	30	90

5 Attempt any two.

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- (a) A company is introducing a job evaluation scheme in which all jobs are graded by points for skill, responsibility and SO on. Monthly pay scales (Rs in 1000's) are then drawn up according to the no. of points allocated and other factors such as experience and local conditions : To date the company has applied this scheme to 9 jobs.

Job	A	B	C	D	E	F	G	H	I
Points	5	25	7	19	10	12	15	28	16
Pay(Rs.)	3.0	5.0	3.25	6.5	5.5	5.6	6.0	7.2	6.1

- (i) Find the least squares regression line for linking pay scales to points.
- (ii) Estimate the monthly pay for a job graded by 20 points.
- (b) Coefficient of rank correlation between X and Y obtained as -0.05 and the sum of the squares of the difference in ranks is 126. Find the no of observation.
- (c) For bivariate data following information is given

$$\bar{X} = 7, \bar{Y} = 21.25, n = 4, \sum (X - 7)^2, \sum (Y - 20)^2 = 225, \sum (X - 7)(Y - 20) = 60$$

Find regression line of Y on X.