SDJ INTERNATIONAL COLLEGE

SYBCA-A.Y-2023-2024

SYBCA Sem-3

Subject: 301-Statistical Methods

Previous Year Question Paper

Prof. Pooja Gurav

RAN-19110001030100001

RAN-1911000103010001

S. Y. B. C. A. (Semester - III) Examination

January - 2021

Statistical Methods : Paper 301

Time: 3 Hours] **[Total Marks: 70**

સૂચના : / Instructions

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of ☛ signs on your answer book

Name of the Examination:

☛ **S. Y. B. C. A. (Semester - III)**

Name of the Subject :

☛ **Statistical Methods : Paper 301**

Subject Code No.: **1911000103010001**

Seat No.:

Student's Signature

(2) All questions are compulsory.

(3) Figures to the right indicate marks of corresponding question.

(4) Follow usual notations.

(5) Use of non-programmable scientific calculator is allowed.

Q 1] **Do as directed: (Any seven)** **[14]**

1. Find the mode of the following numbers: 3, 5, 2, 6, 5, 9, 5, 8, 6.
2. It $\overline{X} - M = 3$ and $Z = 2$ then find mean.
3. Calculate mean deviation of 5, 8, 6, 4, 10.
4. If $b_{yx} = -0.8$, $b_{xy} = -0.5$ then $r = -0.6$. Is it true or false?
5. If two variables have perfect relationship then one regression coefficient is _____ of the other regression coefficient.
6. Define: Variance.
7. Calculate Median of 10, 15, 14 and 20.

8. State the formula for Quartile deviation and Coefficient of Quartile deviation.

9. State any two properties of correlation co-efficient.

10. If covariance between two variables X and Y is 20.25 and standard deviation of X and Y are 5 and 4.5 respectively then find correlation coefficient.

Q 2] Attempt any two: **[14]**

1) Calculate the mean and median of the frequency distribution given below. Hence calculate the mode using the empirical relation between the three:

Height (in cms)	130-134	135-139	140-144	145-149	150-154	155-159	160-164
No. of students	5	15	28	24	17	10	1

2) Given the following frequency distribution with some missing frequencies. If total frequency is 685 and median is 42.6, find the missing frequencies.

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	185	–	34	180	136	–	50

3) Calculate Q_1 and Q_3 of the following data:

Class	0-10	10-20	20-30	30-40	40-50
Frequency	6	25	36	20	13

Q 3] Attempt any two: **[14]**

1) Find the Standard Deviation and coefficient of variation from the following data:

Class	20-25	25-30	30-35	35-40	40-45	45-50
Frequency	170	110	80	45	40	35

2) Find range and standard deviation from the following data:

Class	0-10	10-20	20-30	30-40	40-50
Frequency	6	25	36	20	13

3) Find the mean deviation from the following data:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	6	5	8	15	7	6	5

Q 4] Attempt any two: **[14]**

1) Calculate correlation co-efficient for the following data:

x	23	27	28	29	30	31	33	35	36	39
y	18	22	23	24	25	26	28	29	30	32

2) Calculate Correlation Co-efficient:

X	100	101	102	102	100	99	97	98	96	95
Y	98	99	99	97	95	92	95	94	90	91

3) The coefficient of the rank correlation of the marks obtained by 10 students in Statistics and Accountancy was found to be 0.8. It was later discovered that the difference in ranks in the two subjects obtained by one of the students was wrongly taken as 7 instead of 9. Find the correct coefficient of rank correlation.

Q 5] Attempt any two: **[14]**

1) The following data relate to advertising expenditure (in lakhs of rupees) and their corresponding sales (in crores of rupees):

Advertising Expenditure	10	12	15	23	20
Sales	14	17	23	25	21

Estimate

(a) the sales corresponding to advertising expenditure of Rs. 30 lakhs.

(b) the advertising expenditure for a sales target of Rs. 35 crores.

2) For certain x and y series, two regression lines are $5x - 6y + 90 = 0$, $15x - 8y - 130 = 0$ and $\sigma_x = 5$, find (a) Mean value of x and y

(b) Correlation coefficient (c) Standard deviation of y.

3) You are given below the following information about advertisement expenditure and sales.

	Adv. Exp, (x) (in lakhs)	Sales (y) (in lakhs)
Mean	10	90
S. D.	3	12

Given that Correlation Coefficient = 0.8 then compute the two regression lines.

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RAN-19110001030100001

RAN-1911000103010001

B.C.A. (Sem.-III) Examination

October / November - 2019

Statistical Methods: - 301

Time: 3 Hours] **[Total Marks: 70**

સૂચના : / Instructions

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of ☛ signs on your answer book

Name of the Examination:

☛ **B.C.A. (Sem.-III)**

Name of the Subject :

☛ **Statistical Methods: - 301**

Subject Code No.: **1911000103010001**

Seat No.:

Student's Signature

(1) All questions are compulsory.

(2) Figures to the right indicate marks of corresponding question.

(3) Follow usual notations.

(4) Use of non-programmable scientific calculator is allowed.

Q.1] Do as directed: (Any seven) **[14]**

1. Find Geometric mean of 3, 6, 24 and 48.
2. Find the range and coefficient of range of the data 3, 7, 2, 5, 8, 1.
3. $b_{yx} = 1.17$, $S_x^2 : S_y^2 = 9:81$ then find r and b_{xy}
4. If n = 10, $\Sigma x = 60$, $\Sigma x^2 = 1000$, then find standard deviation.
5. What is the standard deviation of 5, 5, 5, 5, and 5.
6. Compute Median for the following data:
   4, 6, 5, 8,12, 7,10, 5, 15, 9, 10, 11.
7. If two variables have perfect positive correlation then r = _____ .

8. If the sums of squares of rank differences of 7 pairs are 74 then find co efficient of correlation.

9. If r_1 and r_2 are two regression coefficients, then signs of r_1 and r_2 depend on _____ .

10. If $y = x + 1$ and $x = 3y - 7$ are two lines of regression, then $\bar{x}$ = _____ $\bar{y}$ = _____ and r =_____ .

Q.2] Attempt any two: **[14]**

1) Mean of the following frequency distribution is 18.1. Find the missing frequency.

Class	5-10	10-15	15-20	20-25	25-30	30-35
Frequency	11	20	35	20	?	6

2) Calculate Quartile deviation and coefficient of Quartile deviation:

Class	17-19	20-25	26-35	36-40	41-50	51-55	56-60	61-70
Frequency	9	16	12	26	14	12	6	5

3) The length of time taken by each of 18 workers to complete a specific task was observed to be the following:

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

Calculate a median time.

Q.3] Attempt any two: **[14]**

1) Find combined standard deviation of the following data:

No. of observation	Group A	Group B
	20	10
Mean	22	16
SD	$\sqrt{6}$	$\sqrt{2}$

2) Find mean, standard deviation and coefficient of variation for the following data:

Xi	1	2	3	4	5	6	7	8	9
Fi	92	49	52	82	102	60	35	24	4

3) The mean and the standard deviation of a sample of 10 sizes were found to be 9.5 and 2.5 respectively. Later on, an additional observation became available. This was 15.0 and was included in the original sample. Find the mean and standard deviation of 11 observations.

Q.4] Attempt any two; [14]

1) Calculate Correlation Co-efficient:

Production	100	102	104	107	105	112	103	99
No. of unemployed	15	12	13	11	12	12	19	26

2) Calculate correlation coefficient using the following data:

$n = 10$, $\Sigma x = 650$, Σy-660, $\Sigma(x-65)^2 = 15398$, $\Sigma(y-66)^2 = 12224$, $\Sigma(x-65)(y-66) = 12704$

3) For 10 pairs of observations on (X,Y) we get $\overline{X} = 12$, $\overline{Y} = 15$, $Sx = 3$, $S_y = 4$, $r = 0.5$.

Later on, it was noticed that one of the pairs was wrongly taken as (16, 18) instead of (15, 13). Find the correct value of correlation coefficient.

Q.5] Attempt any two: [14]

1) From the following data, find the two regression equations.

X	4	5	6	7	1	2	3
Y	6	5	6	5	2	4	7

2) You are given below the following information about advertisement expenditure and sales.

	Adv. Exp. (x) (in crores)	Sales (y) (in crores)
Mean	20	120
S.D.	5	25

Correlation Coefficient = 0.8. Compute the two regression lines.

3) Obtain the regression line of y on x using the following data:

$n = 7$, $\Sigma x = 21$, $\Sigma y = 20$, $\Sigma x^2 = 91$, $\Sigma xy = 74$

* R C - 3 7 3 5 *

RC-3735

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

March / April - 2017

301 : Statistical Methods

Time : **3** Hours] [Total Marks : **70**

Instructions : (1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :
☛ SECOND YEAR B. C. A. (SEM. 3)

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) Attempt all questions.
(3) Figures to right indicate full marks.
(4) Mention your options clearly.
(5) Use of calculator is permitted.

1 Do as directed : (any seven) **14**

(1) Explain univariate and bivariate frequency distribution.
(2) Find the Arithmetic mean of 13, 16, 24, 48.
(3) Calculate median of the following observations :
7, 4, 10, 9, 15, 12.
(4) Find the range and coefficient of range of the data
3, 7, 5, 6, 2, 8, 1.
(5) Define regression.
(6) Find the variance for the following data :
4, 6, 10, 12, 18.
(7) Value of correlation coefficient of two variables lies between _____ and _____.
(8) If regression lines are perpendicular to each other then r = _____.
(9) What is co-relation of coefficient ?
(10) The regression equation of y and x is $y = 28 + 1.2\ x$, if $S_{xy} = 30$ find standard deviation.

2 Attempt any two : **14**

(1) Following is the cumulative 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 of housewives	50	48	42	40	10	5

A builder has to take a decision on what length of slab to build. What length you would recommend and why ? Calculate mean length of slab.

(2) The intelligence of 510 pre-university students of a colleges is as follows :

I.Q.	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
No. of students	41	52	61	190	67	45	40	14

Find median

(3) Given below is the distribution of profits (in '000 rupees) earned by 94% of the retail grocery shops in a city.

Profits	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of Shops	0	5	14	27	48	68	83	91	94

Calculate the model value.

3 Attempt any two : **14**

(1) The cholera cases reported in different hospitals of a city in a rainy season are given below :

Age Group (Years)	Less than 1	1-5	5-10	10-15	15-25	25-35	35-45	45-65	65 and above
Frequency	15	113	122	91	229	132	65	46	15

Calculate the quartile deviation for the given distribution.

(2) Find the mean deviation of the following series :

x	10	11	12	13	14
Frequency	3	12	18	12	3

(3) The following data relate to the age of a group of workers. Calculate the arithmetic mean and standard deviation. Also calculate coefficient of variation.

Age	20-25	25-30	30-35	35-40	40-45	45-50	50-55
No. of workers	170	110	80	45	40	30	25

4 Attempt any two : **14**

(1) Calculate correlation coefficient for the following data and also calculate coefficient of determination :

x	8	7	6	1	2	3	9	4	5
y	16	14	13	9	8	10	15	12	11

(2) Calculate correlation coefficient using following data :

$n = 10, \quad \Sigma X = 650, \quad \Sigma y = 660, \quad \Sigma(x-65)^2 = 15398,$

$\Sigma(y-66)^2 = 12224, \quad \Sigma(x-65)(y-66) = 12704$

(3) Find the rank correlation coefficient of the following data :

Marks in statistics	84	51	91	60	68	62	86	58	53	47
Marks in Accountancy	78	36	98	25	75	82	90	62	65	39

Calculate the Spearman's correlation coefficient.

5 Attempt any two : **14**

(1) Obtain equations of regression line of y on x and x on y, using the data given below :

x	1	2	3	4	10	−3	−1	9
y	10	8	6	4	0	4	5	−1

(2) Given the following data : Calculate :

(i) The probable value of y when $x = 12$

(ii) The probable value of x when $y = 30$.

	x	y
Mean	27.6	14.8
S.D.	40	20

r = 0.8

(3) Obtain the regression line of y on x using the following data :

$\sum x = 21$, $\sum y = 20$, $\sum x^2 = 91$, $\sum xy = 74$, n = 7

DF-3735

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

March / April - 2016

301 - Statistical Methods

(New Course)

Time : **3** Hours] [Total Marks : **70**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **SECOND YEAR B. C. A. (SEM. III)**

Name of the Subject :

☛ **301 - STATISTICAL METHODS (NEW)**

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

Seat No. :

Student's Signature

(2) Attempt all questions.

(3) Figures to right indicate full marks.

(4) Mention your options clearly.

(5) Use of calculator is permitted.

1 Do as directed : (Any Seven) **14**

(1) A regression equation given by $X+5Y=10$, if $X=5$ then find y.

(2) $b_{yx}=1.17,\ S_x^2:S_y^2=9:81$ find r and b_{xy}.

(3) Compute the mean from the following data :

15, 18, 26, 30, 80, 86, 85

(4) Define : Standard deviation.

(5) If $n=10, \sum x=60, \sum x^2=1000$, then find standard deviation.

(6) Value of correlation coefficient of two variables lies between _____ and _____.

(7) Find Geometric mean of 3, 6, 24 and 48.

(8) Find the range and coefficient of range of the data 3, 7, 2, 5, 8, 1.

(9) Find the variance of the following data :

8, 9, 12, 18, 15.

(10) What is meant by "Correlation" ? Distinguish between positive, negative and zero correlation.

2 Attempt any two : **14**

(1) Find the mode of the following data :

Class	93 – 97	98 – 102	103 – 107	108 – 112	113 – 117	118 – 122	123 – 127	128 – 132
Frequency	2	5	12	17	14	6	3	1

(2) Calculate Quartile deviation and coefficient of Quartile deviation :

Class	17 – 19.5	20 – 25.5	26 – 35.5	36 – 40.5	41 – 50.5	51 – 55.5	56 – 60.5	61 – 70.5
Frequency	9	16	12	26	14	12	6	5

(3) Mean of the following frequency distribution is 18.1. Find the missing frequency.

Class	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35
Frequency	11	20	35	20	?	6

3 Attempt any **two** : **14**

(1) Find combined standard deviation of following data :

No. of observation	*Group A*	*Group B*
	20	10
Mean	22	16
SD	$\sqrt{6}$	$\sqrt{2}$

(2) Find mean, standard deviation, coefficient of standard deviation and coefficient of variation for the following data :

Xi	1	2	3	4	5	6	7	8	9
Fi	92	49	52	82	102	60	35	24	4

(3) For a group of 200 candidates the mean and the standard deviation was found to be 40 and 15 respectively. Later on it was found that the score 43 was misread as 34. Find the correct mean and standard deviation.

4 Attempt any **two** : **14**

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

Year	2005	2006	2007	2008	2009	2010	2011	2012
Pr*oduction*	100	102	104	107	105	112	103	99
No.of unemployed	15	12	13	11	12	12	19	26

(2) Eight competitors were ranked in a beauty contest by 3 judges as follows. Use rank correlation coefficient to determine which of the two judges have similar approach to common tastes and liking for beauty.

Judge X :	2	4	3	8	1	5	7	6
Judge Y :	5	3	2	7	1	8	6	4
Judge Z :	3	1	5	4	2	6	8	7

(3) For 10 pairs of observations on (X, Y) we get $\overline{X} = 12, \overline{Y} = 15, S_x = 3, S_y = 4, r = 0.5$ are obtained. Later on, it was noticed that one of the pairs was wrongly taken as (16, 18) instead of (15, 13). Find the correct value of correlation coefficient.

5 Attempt any two : **14**

(1) Obtain equations of regression line of Y on X and X on Y, using the data give below :

X	1	2	3	4	10	−3	−1	9
Y	10	8	6	4	0	4	5	−1

(2) Information about advertisement and sales of some consumer product given below :

	Adv. expenditure (X) (*Rs. Crores*)	*Sales* (Y) (*Rs. Crores*)
Mean	20	120
S.D.	5	25

Co-relation coefficient = 0.8

Compute the two regression lines.

(3) Obtain regression line of y on x using the following summerised data :

$n = 5,\ \sum x = 30,\ \sum y = 40,\ \sum x^2 = 220,\ \sum xy = 214$

* A - 3 7 3 5 *

A-3735

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

March / April – 2015

301 : Statistical Methods

Time : Hours] [Total Marks : **70**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **Second Year B. C. A. (Sem. III) (CBCS)**

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 the questions are compulsory.
(3) Figures to the right indicates full marks.
(4) Mention your options clearly.

1 Do as directed : (any **seven**) **14**

(1) Compute the mean from the following data :
68, 61, 60, 66, 65, 66, 63

(2) If two variables are having ranks in reverse order, write the value of r.

(3) If $byx = 0.52$ and $bxy = 2.5$. Is it true ?

(4) If the ranks of two variables are equal then correlation coefficient r = _____.

(5) A regression equation given by $2x + 4y = 18$, If $y = 2$ then find x.

(6) If $\text{cov}(x, y) = 8$ and $\sigma_x = -2$ and $\sigma_y = 6$ then find the correlation coefficient between x and y.

(7) What is meant by "correlation" ? Distinguish between positive, negative and zero correlation.

(8) What is variance ?

(9) If the mean = 80, mode = 30.5 and c.v. = 63 then median = _____.

(10) What is the measure of central tendency ?

2 Attempt any **two** : **14**

(a) In an examination of 675 candidates, the examines supplied the following information :

Marks obtained (percentage)	**No. of Candidate**
Less than 10	7
Less than 20	39
Less than 30	95
Less than 40	201
Less than 50	381
Less than 60	545
Less than 70	631
Less than 80	675

Calculate the mean percentage of marks obtained.

(b) 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 a median time.

(c) Calculate the simple mean price per tonne of coal purchased by a company for the half year account for different between the two :

Month	Jan	Feb	Mar	April	May	June
Price/tone	4205	5125	5000	5200	4425	5400
Tones purchased	25	30	40	52	10	45

3 Attempt any **two** : **14**

(a) The petrol filling station has recorded the following data for litres of petrol sold per automobile in a sample of 680 automobiles.

Petrol sold : (litres)	0-4	5-9	10-14	15-19	20-24	25-29
Frequency :	74	192	280	105	23	6

Compute the mean and standard deviation for the data.

(b) The mean and the standard deviation of a sample of 10 sizes were found to be 9.5 and 2.5 respectively, lates on, an additional observation become available. This was 15.0 and was included in the original sample. Find the mean and standard deviation of 11 observations.

(c) The number of employees, average daily wages per employee and the variance of daily wages per employee for two factories age given below :

	Factory A	Factory B
Number of employees :	50	100
Average daily wages (Rs.)	120	85
Variance of daily wage (Rs.)	9	16

In which factory is these grates variation in the distribution of daily wages per employee ?

4 Attempt any **two** : **14**

(a) In an office some keyboard operators, who where already ranked on their speed, were also ranked on accuracy by their supervisor. The result were as follows :

Operators :	A	B	C	D	E	F	G	H	I	J
Speed :	1	2	3	4	5	6	7	8	9	10
Accuracy :	7	9	3	4	1	6	8	2	10	5

Calculate the appropriate correlation coefficient between speed and accuracy.

(b) Find the co-efficient of correlation between age and the sum assured (in 1000 Rs.) from the following table :

Age Group (years)	Sum Assured (Rs.)				
	10	20	30	40	50
20-30	4	6	3	7	1
30-40	2	8	15	7	1
40-50	3	9	12	6	2
50-60	8	4	2	-	-

(c) Calculate the co-efficient of correlation from the following data :

x :	100	200	300	400	500	600	700
y :	30	50	60	80	100	110	130

5 Attempt any **two** : **14**

(a) The following calculations have been made for prices of twelve stock (x) at the Calcutta Stock Exchange. On a certain day along with the volume of sales in thousands of shares (y). From these calculations, find the regression equation of price of stocks on the volume of sales of shares.

$$\Sigma x = 580,\ \Sigma y = 370,\ \Sigma xy = 11494,\ \Sigma x^2 = 41658,\ \Sigma y^2 = 17206$$

(b) The following data give the experience of machine operators and their performance ratings given by the number of good parts turned out per 100 pieces :

Operators :	1	2	3	4	5	6	7	8
Experience (x) :	16	12	18	4	3	10	5	12
Performance (y) :	87	88	89	68	78	80	75	83

Calculate the regression lines of performance ratings on experience and estimate the probable performance if an operator has 7 years experience.

(c) You are given below the following information about advertisement expenditure and sales.

	Adv. Exp. (x) (Rs. in core)	Sales (y) (Rs. in core)
Mean	20	120
S.D.	5	25

Correlation coefficient 0.8

Calculate the two regression equation.