Seat	77
No.	

B.Sc. (Part - I) (Semester - II) Examination, 2013 DESCRIPTIVE STATISTICS - II (Paper - III)

Sub. Code: 55749

Day and Date: Monday, 22-04-2013 Time: 3.00 p.m. to 5.00 p.m.					Total Marks: 50
		ns: 1)	All questions are co	unulsary.	
		2)	Figures to the right		arks.
O1)	Cha				
Q1)			ect alternative :		[10]
	1)	The poi	ints of a scatter diag	ram are on a	vertical line then the coefficient of
		A) +1	ion is	D)	8
		C) 0		B)	
0			orrelation coefficien	D)	less than 0 and Y is 0.8, then the correlation
	,	coefficie	ent between – X and	-Yis	
		A) -0.		В)	
	(C) 0.6	4	D)	0.4
3) I	f one reg	gression coefficient	is greater than	one, then other must be
			ater than one	В)	equal to one
	C) less	than one	D)	equal to zero
4)) If	$r = \pm 1$,	then the lines of reg	ression are	••••••
	A_{j}		cident	B)	parallel
	C) perp	endicular	D)	asymptotic
5)	In	case of	three attributes, tota	l number of	ultimate class frequencies are
	A)			B)	27
	C)	16		D)	64
6)	Ifa	ttributes	s A and B are compl	etely associa	ted then coefficient of association is
			Υ.	overy moscora	ted then edernerent of association is
	A)	1		B)	0
	C)	-1		D)	None of these
7)			r of letters used to d	6 5	in the theory of attribute is called as
. ,			or retters used to di	choic a class	in the theory of attribute is called as
	A)	manif	old class	D١	diabatamana
	12213			B)	dichotomous class
	C)	oruci (of a class	D)	frequency of the class

						- 240	
1	8)	The	collection of information	(data) about ca	ch and every individual of a	country	
		is kn	own as				
		A)	vital statistics	B)	demography		
		C)	census	D)	sample survey		
	9)	IfNI	RR>1 then the population	n is			
1000		A)	increasing	B)	decreasing	a market and professions	
		C)	steady	D)	none of these	THE PROPERTY.	
	10)	STD	R for standard population	on is			
		A)	CDR	B)	TFR		
		C)	SDR	D)	NRR		
			ka Lutt		The Appendix of the Appendix o	[20]	
Q2			ny two of the following	i beryarar sapata	and the second		
	a)	Defin	ne the terms:		The Committee of the		
		i)	Covariance between to				
		ii)	Karl Pearson's correl	ation coefficie	nt.	and	
		Shov	v that coefficient of co	orrelation r is i	ndependent of change of	origin and	
		scale					
	b)	Defin	ne regression. Derive	the line of regi	ession of X and Y by the	e method of	
		least	square				
	c)	Defin	ne Youle's coefficient	of association ((Q) and coefficient of coll	ligation (Y).	
		Prove	e that $Q = \frac{2Y}{(1+Y^2)}$.	d e	198 A. S.		
			(1+1)	(1-			
			gara ayarin s	46,0127	(the part of the p	[20]	
Q3)	Atte	mpt an	y Four of the following	ng:		[20]	
	a)	Write	short note on the sca	atter.		10/00	
	b)	The	values of two regre	ssion coeffic	ients b_{XY} and b_{YX} are	4/5 and 9/20	
	U)	reche	ctively Find correlati	ion coefficient	between X and Y.		
		Cl	Alest regression coeff	icients are ind	ependent of change of or	rigin but not of	
	c)			leterns are ma	English and Artist Control		
		chang	ge of scale.	What Shirt	- Cture ottributes		
	d)	Explain condition of consistency in case of two attributes.					
	e)	Defin	e the rates: TFR and	GRR used in	demography.		
	-		e age SDR and infan				
	f)	Delin	cago berealla intain				



Day and Date: Monday 15-4-2013

Instructions : (i) All questions are compulsory.

Time: 11.00 a.m. to 1.00 p.m.

Total Marks: 40

Total No. of Pages: 2

B.Sc. (Part-I) (Semester - II) Examination - 2013 STATISTICS (Paper - III) (Descriptive Statistics - II)

Sub. Code: 47847

	ii) Figures to the right i	indicate <u>full</u> ma	rks.	
		ndår og til safn	Support and ser	417
16	Seed of Francisco			101
1231	Choose the most correct alternative:		Supplied Harris	[8]
i)	3	And there yet you		
alletters.	a) $-\infty to \infty$ b) $0 to \infty$			the state of the state of
ii)	If the correlation coefficient be coefficient between (X,2Y+3) is.		is - 0.02 then co	rrelation
	a) 0.02 b) 0.04		d) -0.02	
iii)	If there are n dichotomous attrib equal to	utes then the n	umber of ultimate	classes is
	a) 2 ⁿ b) 2 ⁿ -1	c) 3 ⁿ	d) $2^{n}+1$	
iv)	If NRR< 1 then we say that there	is in tota	l population	
- 5	a decrease	b) increase		
	c) no decrease or increase	d) all of th	iese.	
v)	If the correlation coefficient, $r = 1$	then the two	regression lines a	re
v)	a) Perpendicular to each other	b) Paralle	l to each other	
	c) Coincide	d) Do not	exist.	
	In vital statistics the rates of vital			
vi)		Vb) Per the	nusand	
	a) Per million		The second of	
	c) Percentages	d) Fraction	on.	
	The state of the s	200		
				and,

	vii)	If one of the regression coefficient is greater than one then other must be
	F77	a) equal to one
200		c) greater than one d) none of these.
	viii)	If A and B are completely disassociated then Q is equal to
		a) 1 b) 0 c) -1 d) -1 to 5.
02) Atte	empt <u>any two</u> of the following:
	a)	Define Karl Pearson's coefficient of correlation. What is the effect of change
		of origin and scale on coefficient of correlation.
	b)	Define the consistency. Derive the conditions of consistency in case of three
	c)	Derive the equation of the line of regression of X on Y by the least squares method.
Q3)	Atte	mpt <u>any four</u> of the following:
. ,	a)	Explain how the types of correlation coefficient identified graphically.
	b)	Derive the expression for acute angle between the regression lines.
		Define the rates: GFR and NRR used in demography.
		Explain the following terms:
		i) Ultimate class frequency and
		ii) Fundamental set of class frequency.
	e)]	Define Spearman's rank correlation coefficient. Explain how Spearman's formula for rank correlation is modified in case of ties.
		Write a note on Standardized Death Rate (STDR).

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Total	No.	of	Pag	CS	:	3

Sent	
No.	

B.Sc. (Part - I) (Semester - II) Examination, October - 2017 STATISTICS

STATISTICS Descriptive Statistics - II (Paper - III) Sub. Code: 59686 Total Marks: 50 Day and Date : Tuesday, 10 - 10 - 2017 Time: 12.00 noon to 2.00 p.m. All questions are compulsory. Instructions: 1) Figures to the right indicate full marks. 2) [10] Q1) Choose the most correct alternative. If $\sigma_x = \sigma_y$ and $r = \sqrt{2}$, the value of b_{yx} is _____ a) $\sqrt{2}$ i) iii) The value of Cov (aX+b, cY+d) is equal to ____ b) bd Cov(X, Y) ac Cov(X, Y)+bd ii) 2ac Cov(X, Y) iv) ac Cov(X,Y)iii) If the rank correlation coefficient between X and Y for 6 pairs of c) observation is 0.6, then the sum of the squares of the difference between the ranks is 14 i) 10 ii) 8 iii) 12 If r(X,Y) = 1 then we say that X and Y are negatively correlated i) positively correlated. ii) perfectly negatively correlated iii)

perfectly positively correlated

iv)

e) The multiple correlation coefficient lies between i) -1 and 0 ii) 0 and 1 iii) -1 and 1 iv) none of these f) If three planes of regression coincide then we must have i) $R_{1.23} = R_{2.13} = R_{3.12} = 1$ ii) $r_{12.3}^2 = r_{13.2}^2 = r_{2.3.1}^2 = 1$ iii) Determinant matrix of simple correlation coefficient is 0. iv) All the above g) Given $r_{12} = 0.6$, $r_{13} = 0.8$ and $r_{23} = 0.8$, then value of $r_{12.3}$ is i) -1/9 ii) 0.72 iii) 1/9 iv) none of these h) If $e_{1.23}$ is the estimated value of X_1 from regression plane of X_1 on X_2 is X ₃ then covariance between X_1 and $e_{1.23}$ is i) positive ii) negative iii) non-negative iv) none of these The square of simple correlation coefficient is known as i) coefficient of determination ii) coefficient of alienation iii) coefficient of non-determination iv) none of the above If $r_{xy} = -0.8$ and $b_{yx} = -0.4$ then the value of b_{xy} is ii) -1.6 iii) 0.16			- Of sings line b	a factor and	-14
iii) -1 and 1 iv) none of these f) If three planes of regression coincide then we must have i) $R_{123} = R_{213} = R_{312} = 1$ ii) $r_{123}^2 = r_{132}^2 = r_{231}^2 = 1$ iii) Determinant matrix of simple correlation coefficient is 0. iv) All the above g) Given $r_{12} = 0.6$, $r_{13} = 0.8$ and $r_{23} = 0.8$, then value of r_{123} is i) $-1/9$ ii) 0.72 iii) $1/9$ iv) none of these h) If $e_{1,23}$ is the estimated value of X_1 from regression plane of X_1 on X_2 is X ₃ then covariance between X_1 and $e_{1,23}$ is i) positive ii) negative iii) non-negative iv) none of these The square of simple correlation coefficient is known as i) coefficient of determination ii) coefficient of alienation iii) coefficient of non-determination iv) none of the above If $r_{xy} = -0.8$ and $b_{yx} = -0.4$ then the value of b_{xy} is i) 1.6	c)	The multiple correlation co	bellicient lies t		
f) If three planes of regression coincide then we must have i) $R_{1,23} = R_{2,13} = R_{3,12} = 1$ ii) $r_{12,3}^2 = r_{13,2}^2 = r_{23,1}^2 = 1$ iii) Determinant matrix of simple correlation coefficient is 0. iv) All the above g) Given $r_{12} = 0.6$, $r_{13} = 0.8$ and $r_{23} = 0.8$, then value of $r_{12,3}$ is i) $-1/9$ ii) 0.72 iii) $1/9$ iv) none of these h) If $e_{1,23}$ is the estimated value of X_1 from regression plane of X_1 on X_2 and X_3 , then covariance between X_1 and X_2 is i) positive ii) negative iii) non-negative iv) none of these The square of simple correlation coefficient is known as i) coefficient of determination ii) coefficient of non-determination iv) none of the above If $r_{xy} = -0.8$ and $b_{yx} = -0.4$ then the value of b_{xy} is ii) -1.6		i) -1 and 0	ii)	0 and 1	
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iv) All the above g) Given $r_{12} = 0.6$, $r_{13} = 0.8$ and $r_{23} = 0.8$, then value of $r_{12.3}$ is i) $-1/9$ ii) 0.72 iii) $1/9$ iv) none of these h) If $e_{1,23}$ is the estimated value of X_1 from regression plane of X_1 on X_2 is i) positive ii) negative ii) non-negative iv) none of these The square of simple correlation coefficient is known as i) coefficient of determination ii) coefficient of alienation iii) coefficient of non-determination iv) none of the above If $r_{xy} = -0.8$ and $b_{yx} = -0.4$ then the value of b_{xy} is i) 1.6	ii)	$r_{12.3}^2 = r_{13.2}^2 = r_{23.1}^2 = 1$			Absent
g) Given $r_{12} = 0.6$, $r_{13} = 0.8$ and $r_{23} = 0.8$, then value of $r_{12.3}$ is i) $-1/9$ ii) 0.72 iii) $1/9$ iv) none of these h) If $e_{1,23}$ is the estimated value of X_1 from regression plane of X_1 on X_2 is i) positive ii) negative iii) non-negative iv) none of these The square of simple correlation coefficient is known as i) coefficient of determination ii) coefficient of alienation iii) coefficient of non-determination iv) none of the above If $r_{xy} = -0.8$ and $b_{yx} = -0.4$ then the value of b_{xy} is i) 1.6	iii)	Determinant matrix of	simple correla	tion coefficient is 0	· San Contract
ii) -1/9 iii) 0.72 iii) 1/9 iv) none of these h) If e _{1,23} is the estimated value of X ₁ from regression plane of X ₁ on X ₂ : X ₃ then covariance between X ₁ and e _{1,23} is i) positive ii) negative iii) non-negative iv) none of these The square of simple correlation coefficient is known as i) coefficient of determination ii) coefficient of alienation iii) coefficient of non-determination iv) none of the above If r _{xy} = -0.8 and b _{yx} = -0.4 then the value of b _{xy} is i) 1.6	iv)	All the above			early w.
iii) 1/9 iv) none of these h) If e _{1,23} is the estimated value of X ₁ from regression plane of X ₁ on X ₂ ; X ₃ then covariance between X ₁ and e _{1,23} is i) positive ii) negative iii) non-negative iv) none of these The square of simple correlation coefficient is known as i) coefficient of determination ii) coefficient of alienation iii) coefficient of non-determination iv) none of the above If r _{xy} = -0.8 and b _{yx} = -0.4 then the value of b _{xy} is i) 1.6	g) Giv	ren $r_{12} = 0.6$, $r_{13} = 0.8$ and	$d r_{23} = 0.8$, th	en value of r _{12.3} is	
h) If $e_{1,23}$ is the estimated value of X_1 from regression plane of X_1 on X_2 and X_3 then covariance between X_1 and X_2 is i) positive ii) negative iii) non-negative iv) none of these The square of simple correlation coefficient is known as i) coefficient of determination ii) coefficient of alienation iii) coefficient of non-determination iv) none of the above If $r_{xy} = -0.8$ and $r_{yx} = -0.4$ then the value of r_{xy} is i) 1.6	i)	-1/9	ii)	0.72	in all
i) positive ii) negative iii) negative iii) non-negative iv) none of these The square of simple correlation coefficient is known as i) coefficient of determination ii) coefficient of alienation iii) coefficient of non-determination iv) none of the above If $r_{xy} = -0.8$ and $b_{yx} = -0.4$ then the value of b_{xy} is i) 1.6	iii)	1/9	iv)	none of these	
iii) non-negative iv) none of these The square of simple correlation coefficient is known as i) coefficient of determination ii) coefficient of alienation iii) coefficient of non-determination iv) none of the above If $r_{xy} = -0.8$ and $b_{yx} = -0.4$ then the value of b_{xy} is i) 1.6 ii) -1.6					C ₁ on X ₂ and
The square of simple correlation coefficient is known as	i) p	ositive	ii)	negative	
i) coefficient of determination ii) coefficient of alienation iii) coefficient of non-determination iv) none of the above If $r_{xy} = -0.8$ and $b_{yx} = -0.4$ then the value of b_{xy} is i) 1.6 ii) -1.6	iii) no	on-negative	iv)	none of these	
iii) coefficient of non-determination iv) none of the above If $r_{xy} = -0.8$ and $b_{yx} = -0.4$ then the value of b_{xy} is i) 1.6 ii) -1.6	The sq	uare of simple correlat	ion coefficie	nt is known as	<u></u>
If $r_{xy} = -0.8$ and $b_{yx} = -0.4$ then the value of b_{xy} is i) 1.6 ii) -1.6	i) co	efficient of determinati	on ii)	coefficient of ali	enation
i) 1.6 ii) -1.6	ііі) сов	efficient of non-determ	ination iv)	none of the abo	ve
	If $r_{xy} = -$	0.8 and $b_{yx} = -0.4$ the	en the value	of b _{xy} is	
	i) 1.6		ii)	-1.6	- 4
	iii) 0.16		iv)	0.4	

j)

 Derive the equation of regression line of Y on X by the method of least square.

- b) Define Product moment correlation coefficient. Discuss the effect of change of origin and scale on coefficient of correlation.
- c) Define residual of X_1 on X_2 and X_3 and find it's mean and variance.

Q3) Attempt any four of the following.

[20]

- a) Write short note on scatter diagram.
- b) State the properties of regression coefficients and prove any one of them.
- c) Define
 - i) Partial correlation coefficient
 - ii) Multiple correlation coefficient.
- d) With usual notation show that $b_{12,3} = (b_{12} b_{13} b_{32})/(1 b_{23} b_{32})$.
- e) With usual notation show that $r_{23.1}^2 = b_{23.1} b_{32.1}$.
- f) Show that $1 R_{1.23}^2 = (1 r_{12}^2)(1 r_{13.2}^2)$.



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No.	48		N. A.	~ · · · ·	•	. D (C	1
B.Sc	e. (C	Comp	uters Science) Examinatio	(Entire) (on, April - FISTICS	201	t -1) (S 8	semester - II)
	3	D	escriptive Statis			ner - T	D .
/	-	De	_	ode: 5971		per z	
Dawana	l Dat	. Was	Inesday, 25 - 04 - 20				Total Marks: 50
			o 2.00 p.m.	,10			
Instructi	ons:	1)	All questions are co	ompulsory.			
		2)	Figures to the right	indicate full 1	mark	s.	
		3)	Use of calculator ar	nd statistical (table	is allowed	l.
Q1) Ch	oose	the co	rrect alternative:				[10]
a)	Th	e mult	iple correlation co	efficient lies	s bet	ween	1
	i)	0 to	9	i	i)	-1 to 1	Sho .
	iii)	0 to	∞	i	v)	-∞ to ∘	· St.
b) `	The	corre	elation coefficient	between (X	(,X)	is	
	i)	0			ii)	1	
	iii)	-1			iv)	Var(X)	
c)	-	ations nd Y a		n lines are	X+Y	Y=8 and	X-Y=4 then mean of
	i)	(2, 6)		ii)	(8, 4)	
	iii)	(6, 2)	1		iv)	(0, 2)	1
		SAS					Sho
	1	-					PT

- 5	1.23	I then $R_{2.13}$				1
	i) 0	617		ii)	-1	76
	iii) So			iv)	none of the	se 20
e) 🥎	If there	exists perfec	t correlation b	etwe	en X and Y	then r(X, Y) is
	i) 1			ii)	0	
i	ii) -1			iv)	-1 or +1	
) I	f r(X, Y)	= -0.8 and t	$p_{yx} = -0.4$ then	the v	alue of b _{xy} is	- F
i)	1.6			ii)	-1.6	
iii	-0.4	1		iv)	0.4	1
i) ii) iii)	perpe Coinc	ndicular to e			S	Jr. Sr.
•						
If the	nree regi fficient	ression plan matrix R	es coincide thor $ \Delta $ is	en de	eterminant o 	f total correlation
i)	0			ii)	1	
iii)	greater	then zero		iv)	greater tha	an 1
. 1	SONG!					1.5do
7					0	9,000
	ii) iii) iii) iv) If the coef i)	i) 0 iii) 1 e) If there i) 1 iii) -1 If r(X, Y) i) 1.6 iii) -0.4 When corr i) parall ii) perpe iii) Coinc iv) none of If three regions coefficient i) 0	ii) 0 iii) 1 e) If there exists perfect i) 1 iii) -1 If r(X, Y) = -0.8 and b i) 1.6 iii) -0.4 When correlation coeff i) parallel to each of ii) perpendicular to e iii) Coincident iv) none of these If three regression plant coefficient matrix R i) 0	i) 0 iii) 1 e) If there exists perfect correlation be i) 1 iii) -1 If $r(X, Y) = -0.8$ and $b_{yx} = -0.4$ then i) 1.6 iii) -0.4 When correlation coefficient $r=0$ then i) parallel to each other ii) perpendicular to each other iii) Coincident iv) none of these If three regression planes coincide the coefficient matrix $ R $ or $ \Delta $ is i) 0	i) 0 ii) iii) 1 iv) e) If there exists perfect correlation between iii) 1 ii) iii) -1 iv) If $r(X, Y) = -0.8$ and $b_{yx} = -0.4$ then the volume iii) 1.6 ii) iii) -0.4 iv) When correlation coefficient $r=0$ then the two ii) parallel to each other ii) parallel to each other iii) Coincident iv) none of these If three regression planes coincide then decoefficient matrix $ R $ or $ \Delta $ is	ii) 0 iii) 1 iv) none of these e) If there exists perfect correlation between X and Y ii) 1 ii) 0 iii) -1 or +1 If $r(X, Y) = -0.8$ and $b_{yx} = -0.4$ then the value of b_{xy} is i) 1.6 ii) -1.6 iii) -0.4 When correlation coefficient r=0 then the two regression i) parallel to each other ii) perpendicular to each other iii) Coincident iv) none of these If three regression planes coincide then determinant of coefficient matrix $ R $ or $ \Delta $ is

- i) One can estimate value of Y for a given value of X by using
 - i) line of regression X on Y
 - ii) line of regression Y on X
 - iii) graphical met
 - iv) none of these
- j) The concept of rank correlation was given by _____
 - i) Spearman

ii) Galton

iii) Mood

iv) none of these

Q2) Attempt any two of the following:

[20]

- a) What is correlation? Define Karl Pearson's correlation coefficient (r) and show that it lies between -1 to 1.
- b) Derive the equation of regression line of Y on X by using least square method.
- c) If $r_{12} = r_{13} = r_{23} = \rho$ then show that

$$i) R_{1.23}^2 = \frac{2\rho^2}{1+\rho}$$

$$r_{12.3} = \frac{\rho}{1+\rho}$$

Q3) Attempt any four of the following:

[20]

 State and prove effect of change of origin and scale on Karl Pearson's correlation coefficient.

- b) Are the following values consistent? $r_{12}=0.6$, $r_{13}=-0.4$, $r_{23}=0.7$.
- c) If rank correlation coefficient (R) = 2/3 and $\Sigma d^2 = 55$. Find number of pairs in the series (n).
- d) Explain r=0, r=-1 and r=+1 using scatter diagram.
- e) Show that if $R_{1.23} = 0$ it does not imply that $R_{3.12} = 0$.
- f) Find coefficient of correlation between X and Y for following data. n = 7, $\Sigma x = 119$, $\Sigma x^2 = 2833$, $\Sigma y = 87$, $\Sigma y^2 = 2385$, $\Sigma xy = 521$.

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Monda

Seat No.

B.Sc. (Part - I) (Semester - II) Examination, May - 2018 STATISTICS

Descriptive Statistics-II (Paper - III)

Sub. Code: 59686

Day and Date: Wednesday, 2-5-2018

Total Marks: 50

Time: 12.00 noon. to 2.00 p.m.

Instructions:

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Use of scientific calculator is allowed.

Q1) Choose the most correct alternative.

[10]

- a) The concept of covariance is related with how many variables?
 - i) exactly two

ii) at least one

iii) at most two

- iv) at least two
- b) If $b_{yx} > 0$ then _____
 - i) $b_{yx} > 0$
 - ii) X and Y are positively correlated
 - iii) X and Y takes only positive values
 - iv) only (i) and (ii) are true
- c) Regression plane of X_2 on X_1 and X_3 obtained by least square method is given by _____

i)
$$X_2 = a + bX_1 + cX_3$$

ii)
$$X_2 = a + b_{2,1}X_1 + b_{2,3}X_3$$

iii)
$$X_2 - \overline{X}_2 = b_{21.3} (X_1 - \overline{X}_1) + b_{23.1} (X_3 - \overline{X}_3)$$

iv)
$$X_2 = b_{21.3}X_1 + b_{23.1}X_3$$

d)) N	Ican of residual is always	***	positive
0.7	i)	non - zero	ii) · 、	•
	iii) negative	iv)	zero
c)		(X,Y)w	then per then	blotted in a scatter diagram are on correlation between X and Y is
	 i)	positive	ii)	zero
	(iii	perfect positive	iv)	none of these
f)	(X	sum of the ranks of each pair (,Y) is (N + 1) then identify t efficient between X and Y?	X _i , Y he v) for N pairs of observations on alue of Spearman's correlation
	i)	N	ii)	1
	iii)	0		-1
g)	If r	$r_{12} = -0.5$ and $r_{13} = 0.6$ then iden	tify t	he minimum value of R _{1,23} ?
	i)	-0.5	ii)	-0.6
	iii)	0.6	iv)	0.1
h)	If re	egression equations between X what will be the correlation co	and Y effic	are perpendicular to each other ient between X and Y?
	i)	0	ii)	1
	iii)	-1	iv)	positive
i)	If coef	orrelation coefficient between T	n X a	and Y is 0.75 then correlation = 10 - Y is
	i)	0	ii)	1
		0.75	iv)	-0.75
j) .	If R	$_{2.13} = 0$ then		
		$r_{12} = 0$	ii)	$r_{23} = 0$
		$r_{13} = 0$		only (i) and (ii) are true
	\$)			[20]

Q2) Attempt any two of the following.

Define regression coefficients between two variables X and Y. State and prove effect of change of origin and scale transformation on regression coefficient.

- b) Using least square method, derive formula for regression plane of X₁ on X₂ and X₃.
- c) Define partial correlation coefficient $r_{12.3}$.

 Derive formula for $r_{12.3}$ in terms of simple correlation coefficients.
- Q3) Attempt any four of the following.

[20]

- a) Explain scatter diagram and its utility.
- b) Let $r_{(X,Y)}$ be a Karl Pearson's correlation coefficient between X and Y. Define U = (X A)/h and V = (Y-B)/k, where A, B, $h \ne 0$ and $k \ne 0$ are any constants then prove that:

$$r_{(X,Y)} = \begin{cases} r_{(U,V)} & \text{if } hk > 0 \\ -r_{(U,V)} & \text{if } hk < 0 \end{cases}$$

- c) Define Spearman's rank correlation coefficient. State its formulae explicitly when:
 - i) observations are not repeated and
 - ii) observations are repeated
- Derive formula for an acute angle between two regression lines between X and Y.
- e) Define a residual X_{1.23} and obtain its mean.
- f) With usual notations prove that $(1-R_{123}^2)=(1-r_{12}^2)(1-r_{132}^2)$.



Total No. of Pages: 3

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No.	

B.Sc.(Part-I) (Semester-II) Examination, April-2016 STATISTICS

Descriptive Statistics-II (Paper-III)

				Sub. Code: 5				
Day and Date: Saturday, 16-04-2016 Time: 12.00 noon to 2.00 p.m.							Total Marks	: 50
	Instruction	is: 1) 2)	t. 1€710	ns are compulsor the right indicate		arks.		
	Q1) Cho	ose the	most correct	alternative:				[10]
	a)	The co	rrelation coe	efficient betwee	en (X,	X) is		
		i) 1			ii)	0 .	C	
		iii) –	1	F _u	iv)	V(X)		
	, b)	If X as	nd Y are inde	pendent then c	orrela	tion coefficie	ent between th	em is
			 •	a sign	56			
		i) n	naximum	P.	ii)	minimum		
		iii) z	zero		iv)	-1 or 1	(4)	
	. c)			regression line are		X + Y = 8	and $X - Y = 4$	l, then
		i) ((2, 6)		ii)	(8, 4)		
		iii)	(6, 2)		iv)	(0, 2)		

d,	n in ob	case of rank correlation, it obsises vation on Y is repeated 2 time	er vau oa the	en correction factor is
	i)	2	100	2.5
	90	,1	iv)	
0)	1177 is f	$b_{_{ m AV}}$ and $b_{_{ m AV}}$ are two repression co false?	offici	ents then which of the following
	i)	$b_{yy} = 0.5$ and $b_{yy} = 2$	ii)	$b_{yy} = 0.2$ and $b_{yy} = 0.4$
	iii)	$\partial_{pr} = 0.5$ and $\partial_{qp} = 0.2$	11/)	b = 0.1 and $b = 0.5$
t)	The	partial correlation coefficient	r_n , i	S
		$\frac{r_{12} - r_{13}r_{23}}{\sqrt{\left(1 - r_{13}^2\right)\left(1 - r_{23}^2\right)}}$		$\frac{r_{12} - r_{13}r_{23}}{\sqrt{\left(1 - r_{23}^2\right)}}$
	iii)	$\frac{r_{12} - r_{13} r_{23}}{\sqrt{\left(1 - r_{13}^2\right)}}$	iv)	$\sqrt{\frac{r_{12}^2 + r_{13}^2 - 2r_{12}r_{13}r_{23}}{1 - r_{23}^2}}$
g)	The	order of residual X _{1,23} is		- €
	i)	0	ii)	1
	iii)	2	iv)	23
h)	If R	$L_{1.23} = 1$ then $R_{2.13}$ is equal to _		
	i)	0	ii)	1
	iii)	-1	iv)	none of these
i)	The	multiple correlation coefficier	nt lies	between
	i)	0 to 1	ii)	-1 to 1
	iii)	0 to ∞	iv)	-∞ to ∞
If $X_1 = a + b X_2 + c X_3$ is the best regression under least square method then				ession plane of X ₁ on X ₂ and X ₃
	i)	$b = b_{12.3}$ and $c = b_{13.2}$	ii)	$b = b_{1.23}$ and $c = b_{1.32}$
	iii)	$b = b_{23.1}$ and $c = b_{32.1}$	iv)	$b = b_{12}$ and $c = b_{13}$

Q2) Attempt Any Two from the following:

D-367

[20]

- What is correlation? Define Karl Pearson's correlation coefficient (r) and show that it lies between -1 to 1. a)
- Derive the equation of regression line of Y on X by using least square b) method.
- Define multiple correlation coefficient (R_{1,23}). Obtain an expression for $R_{1.23}$ in terms of simple correlation coefficients. c)

Q3) Attempt Any Four from the following:

[20]

- Explain the concept of positive and negative correlation. a)
- State and prove any one property of residual. b)
- Show that the Karl Pearson's coefficient of correlation is a geometric c) mean of regression coefficients.
- Define: d)

- Spearman's rank correlation coefficient. i)
- Partial Regression coefficients. ii)
- Residual of variable X_1 w.r.t. X_2 and X_3 . iii)
- The regression equations are 4X 5Y + 33 = 0 and 20X 9Y 107 = 0. e) Find:
 - Regression Coefficients. i)
 - Corr. (X, Y). ii)
- With usual notations, show that $b_{12.3} = \frac{b_{12} b_{13}b_{32}}{1 b_{22}b_{22}}$. f)

Seat	
No.	

B.Sc. (Part – I) (Semester – II) Examination, 2011 STATISTICS (Paper – III) (Descriptive Statistics – II) Sub. Code: 47847

	Sub	Code: 47847		
Day and Date: Tueso Time: 10.30 a.m. to				Total Marks : 40
Instruction	s: 1) All questio 2) Figures to	ns are compulso the right indicate		
l. Choose the corre	ect alternative :			8
i) If ranks in ea	ch pair are equal tl	nen Spearman's ra	nk correlation	coefficient is
a) 0	b) 1	c) -1	d) $\frac{1}{2}$	
ii) If $b_{yx} = -$	$\left(\frac{1}{4}\right)$ and $b_{xy} =$	-1 then correla	ation coeffic	eient (r) is
a) $\frac{1}{4}$	b) $-\frac{1}{4}$	c) $\frac{1}{2}$	d) $-\frac{1}{2}$	
iii) In case of thre	e attributes, total N	o. of class frequen	cies are	* * * * * * * * * * * * * * * * * * * *
a) 8	b) 27	c) 16	d) 64	
iv) The limit o	f the Spearman	's rank correla	tion coeffici	ent (R) is
a) 0 to 1	b) -1 to 1	c) 0 to ∞	d) -∞ to ∘	*
v) If $r = 0$, the ar a) 90°	b) 45°	wo regression line	es is d) 180°	<u> </u>
4) 50	0, .0	may n. and	and the second second	



	vi) Given two reg	gression lines as X	X + 4Y - 8 = 0 a	and $X - 2Y + 4 = 0$, the	en
	Mean $(\overline{X}, \overline{Y})$	of X and Y are			
	a) (4, 5)	b) (2, 1)	c) (4, 1)	d) (0, 2)	
,		a, $(A\beta) = c$, (αB) : associated if	= b, $(\alpha\beta)$ = d then	n two attributes are said t	O
	a) ad > bc			1) (- , 1) , (1 , .)	
				d) $(a + d) > (b + c)$	
V	iii) If NRR <1, the	will be decreasing	10(1)		
	•	will be increasing			
		vill remain same			
	d) Can not say				
					1.6
2. <i>I</i>	Attempt any two o		regulation of	and the second	16
	 Derive the Speaties. 	rman's rank correl	ation coefficient f	formula in case of withou	II
j	i) Derive the equa	tion of regression	line Y on X by th	e method of least square	2.
ii	i) Derive the cond	litions of consister	ncy in case of 3 at	tributes A, B, C.	
	ttempt any four o				16
٠,	Write short note	on Scatter Diagra	m method.		X
i) State any two p	roperties of regress	sion coefficients	and prove one of them.	
	Write short note	on Age-SDR.			
iv) For three attribu	tes A, B, C, expre	ss following class	s frequencies in terms o	f
	positive class from		ir. ere tida.		
	$(A\beta), (B\gamma), (\alpha\beta)$, (αβγ).		viation and coefficient o	f
v)	Prove the relatio colligation.	n between Yule's c	oemicient of assoc	ciation and coefficient o	
vi	Define:			Haraman and Area and	
	i) C.D.R.	ii) T.F.R.			

Seat No.

Total No. of Pages: 3

B.Sc. (Part - I) (Semester - II) Examination, May - 2015 STATISTICS (Paper - III) (New)

(Descriptive Statistics - II)

Sub. Code: 59686

Day and Date: Monday, 11 - 05 - 2015

Total Marks: 50

Time: 12.00 noon to 02.00 p.m.

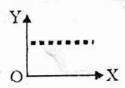
Instructions: 1) All questions are Compulsory.

2) Figures to the right indicate full marks.

Q1) Choose the most correct alternative:

[10]

i) The following scatter diagram shows:



- a) positive correlation
- b) negative correlation
- c) perfect correlation
- d) no correlation

ii) If
$$Cov(X, Y) = 2$$
 then $Cov(3X + 4, -4Y + 3) = ...$

a) -24

b) - 5

c) 24

- d) 12
- iii) The concept of rank correlation was given by:
 - a) Galton

b) Kendall

c) Spearman

- d) Mood
- iv) If rank correlation coefficient is equal to 1, it mean that:
 - a) all differences of ranks are nonzero
 - b) ranks in each pair are equal
 - c) ranks in each pair are not equal
 - d) none of these

				N - 1462
v)	If o	one of the regression coefficien	t is g	reater than one then other must
	a)	equal to one	b)	less than one
	c)	greater than one	d)	none of these
vi)	if b	$b_{xy} = -1/9$ and $b_{xy} = -1$ then c	orrela	ation coefficient r is
	a)	- 1/9	b)	1/9
	c)	- 1/3	d)	1/3
vii)	Wh	ich of the following coefficier	it hav	ve range 0 to 1
	a)	Simple correlation coefficient	t	
	b)	Rank correlation coefficient		
	c)	Multiple correlation coefficie	ent	
	d)	Partial correlation coefficient	J 45	
viii)	If R	$c_{1.23} = 0$ then $r_{12} = r_{13} = $	-	
	a)	0	b)	1
	c)	-1	d)	0.5
ix)	The	partial correlation coefficient	r _{12.3}	=
		$r_{-}-r_{-}r_{-}$		$r_{12} - r_{13}r_{23}$
	a)	$\frac{r_{12} - r_{13}r_{23}}{\sqrt{(1 - r_{13}^2)(1 - r_{23}^2)}}$	b)	$\frac{r_{12} - r_{13}r_{23}}{\sqrt{(1 - r_{23}^2)}}$
				7 2 2
	c)	$\frac{r_{12}-r_{13}r_{23}}{\sqrt{(1-r_{13}^2)}}$	d)	$\sqrt{\frac{r_{12}^2 + r_{13}^2 - 2r_{12}r_{13}r_{23}}{1 - r_{23}^2}}$
		V 13.	4	determinant of total correlation
x)	If th	ree regression planes coincide ficients matrix (R) is	inen — ·	determinant of total correlation
	a)	$ \mathbf{R} = 0$	b)	R = 1 $ R > 1$
	c)	R = 0 $ R > 0$	d)	R > 1

Q2) Attempt any Two of the following:

[20]

- i) Define Spearman's rank correlation coefficient. Derive the Spearman's rank correlation coefficient formula in case of without ties.
- ii) Derive the equation of regression line of Y on X by the method of least square.
- iii) Define multiple correlation coefficient. Obtain an expression for multiple correlation coefficient in terms of simple correlation coefficients.

Q3) Attempt any four from the following:

[20]

- i) Write Short note on Scatter diagram method.
- ii) Derive the expression for acute angle between two regression lines.
- iii) State and prove any one property of residuals.
- iv) Show that multiple correlation coefficient lies between 0 to 1.

v) If
$$r_{12} = r_{13} = r_{23} \rho(\rho \neq \pm 1)$$
 then show that $1 - R_{1.23}^2 = \frac{(1 - \rho)(1 + 2\rho)}{(1 + \rho)}$

- vi) Define:
 - a) Simple correlation coefficient
 - b) Residual of X₁ on X₂ and X₃