

C	1	
Seat		
No.	46	

(D	escriptive S	er – II) Examina (Paper – III) Statistics – II)	ation, 2011
Day and Date: Saturday, 30-4- Time: 3.00 p.m. to 5.00 p.m.	2011		Total Marks: 40
Instructions: 1) All ques 2) Use of a	caiculators ar	npulsory. nd statistical table bracket indicate	s is allowed . f ull marks.
1. Choose the correct alterna	itive :		14.2 5.12
i) For symmetric distribut	ion, the value	of μ ₃ is	(8)
1 .	b) positive	c) zero	d) negative
ii) For a positively skewed	distribution		,Barrio
a) mean = median = m	ode b)	median < mean <	mode
c) mean < median < m		mode < median <	
iii) If correlation coefficien	t between X a	nd Y is 0.75, then	correlation coefficient
between - X+2 and Y+	1 is		la a g
a) 0.75	b) – 0.75	c) 1.75	d) 0
iv) If the variables X and Y	changes in s	ame direction then	cov(X, Y) is
/		c) positive	Will stand the second
v) If one regression coeffi	cient is greate	er than one, then th	e other must be
a) less than one		greater than one	
c) equal to one	959	none of these	
vi) The term 'regression' is	s first introdu	ced by	
a) R.A. Fisher	E .	Sir Francis Galton	
Varl Pearson	d)	Spearman	



- vii) A measure of extent of linear relationship between X_1 with other variables X_2 and X_3 is given by
 - a) Simple correlation
- b) Partial correlation
- c) Multiple correlation
- d) Simple regression
- viii) The residual X_{1.23} is called as residual of order
 - a) 0

- b)]
- c) 2
- d) 3

2. Attempt any two of the following three:

(8+8)

- i) Define Karl Pearson's correlation coefficient. Show that it lies between -1 and +1.
- ii) Define regression coefficients. State and prove any two properties of regression coefficients.
- iii) Given for a trivariate data

$$\sigma_1 = 3$$
, $\sigma_2 = \sigma_3 = 4$, $r_{12} = 0.7$, $r_{13} = r_{23} = 0.6$

Obtain i) r_{23.1}

- ii) R_{2.31}
- iii) $\sigma_{2.13}$
- 3. Attempt any four of the following:

(4+4+4+4)

- i) Write a short note on Kurtosis.
- ii) Show that $\beta_2 \ge 1$.
- iii) Find the number of pairs of observations from the following information. r = -0.4, $\sum x=100$, $\sum x^2=2250$, $\sum y=100$, $\sum y^2=2250$ and $\sum xy=1900$.
- iv) 4y = x-5 and 16y = x+64 are the lines of regression. Find the coefficient of correlation between x and y.
- v) In a trivaviate data $r_{12}=0.6$, $r_{13}=-0.4$, $r_{23}=-0.7$. Are these values consistent?

vi) If
$$r_{12.3} = 0$$
 Show that $r_{13.2} = r_{13} \frac{\sqrt{1 - r_{23}^2}}{1 - r_{12}^2}$.

Seat	
No.	
110.	

B.C.S. (Part - I) (Semester - II) Examination, 2013

STATISTICS (Paper-III)

Descriptive Statistics - II

Sub. Code: 58180

Day :	and	Date	:	Saturday,	04	_	05.	- 201	13
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Total Marks: 50

Time: 3.00 p.m. to 5.00 p.m.

P

Instructions: 1) All questions are compulsory.

- 2) Use of calculators and statistical table is allowed.
- 2) Figures to the right in the bracket indicate full marks.

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() ()	(hoose	the correct	alternative	٠
21	CHOOSE	me confect	ancinative	

[10]

- a) If $\aleph_2 < 0$, then the frequency curve is ____.
 - i) mesokurtic

ii) platykurtic

iii) leptokurtic

- iv) any of the above
- b) If $r = \pm 1$, the angle between the two lines of regression is _____.
 - i) 90°

ii) 45°

iii) 0°

- iv) 30°
- c) If there exists perfect correlation between X and Y then correlation coefficient (r) is _____.
 - i) 0

ii)

iii) —1

- iv) -1 or +1
- d) If $byx = -\left(\frac{1}{4}\right)$ and bxy = -1 then correlation coefficient (r) is _____.
 - i) $\frac{1}{4}$

ii) $-\frac{1}{4}$

iii) $\frac{1}{2}$

- iv) $-\frac{1}{2}$
- e) Given two regression lines as X + 4Y 8 = 0 and X 2Y + 4 = 0 then Mean $(\overline{X}, \overline{Y})$ of X and Y are ____.
 - i) (4, 5)

ii) (2, 1)

iii) (4, 1)

iv) (0, 2)

	f)	For a	a platykurtic curve	:	• `	ev > 0
		i)	8 ₂ < 0			$8_2 > 0$
		iii)	$8_2 = 0$			$\beta_2 < 3$
	g)	The	partial regression coeff	icient b _i	_{2.3} is	of order
	•	i)	one	i	1)	two
		iii)	zero	i	(v)	three
	h)	Exp	enditure on Advertisem	ent and s	scale	have
		i) .	Positive correlation	i	ii) -	Negative correlation
		iii)	Perfect Negative correl	lation i	iv)	No correlation
	i)		relation coefficient always			
	,	i)	0 to 1			
		iii)	0 to ∞			
	j)	Giv				$\mu_3 = 0$ then given distribution is
	37					
		i)	positively skewed		ii)	negatively skewed
		iii)	symmetric		iv)	leptokurtic
Q2)	At	temp	t any two of the following	ng:		[10 + 10 = 20]
	a)	Wh	en are two Variables sa	id to be c	corre	lated? Describe scatter diagram
		and	explain its utility in the	study of	corı	relation.
	b)	Def	ine multiple and partia	l correlat	tion	coefficient for a trivariate data
		Stat	te their limits. State the	e necess	ary a	and sufficient condition for the
		thre	e regression planes to	coincide.		
	c)	Der	rive the two equations	of lines	of r	egression by using least square
			hod.			
			8 18 8 88			20
Q3)	At	temp	t any four of the follow	ing:		[5+5+5+5=20]
	a)	Sta	te the properties of regi	ession c	oeff	icients.
	b)	If F	$R_{1.23} = 1$, then show that	$t R_{2,2} =$	1 =	R
	c)	Ifc	orrelation coefficient b	etween t	WO 1	random variables X and Y is 0.8
	•)	fine	d the correlation coeffic	ient betv	veen	andom variables A and
		i)	12X and 10Y		ii)	$\frac{X-12}{S}$ and $\frac{12-Y}{S}$
		,			*	S S
		•••	$\frac{X}{12}$ and $\frac{Y}{12}$			
		111)	12 and 12			
		Jus	tify your answer.			

d) Compute regression coefficient from the following data.

n = 8,
$$\Sigma$$
 (X-45) = -40, Σ (X-45)² = 4400
 Σ (Y-150) = 280, Σ (Y-150)² = 167432,
 Σ (X-45) (Y-150) = 21680

- e) Describe scatter diagrams.
- f) Explain the term Kurtosis.



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						D = 1102
Seat No.						Total No. of Pages: 3
В	.C.S	. (Pa	art - I) (Semester -	- II) Exami	nation, November - 2015
				12	TICS (Paper	
				Descr	iptive Statis	stics
				Sub.	Code: 597	710
Time	: 3.0	0 p.r	n. to 5.00			Total Marks :50
Instr	uctior	15:	102020 000000 0000000000000000000000000		Compulsory.	
					indicate Full m	
			0, 03	e of carculator	and statistical	table is allowed.
Q1)	Cho	ose t	he corre	ct alternative	е.	[10]
	i)	If the	ne correl fficient l	ation coeffic between 4 +	ient between 2X and 3Y +	X and Y is -0.65 the correlation 1 is
		a)	0.65		b)	0.35
		c)	-0.65		d)	-0.35
	ii)	If o	one regr	ession coeff	icient is gre	ater than one, then other must
		a)	less tha	in one	b)	greater than one
		c)	equal to	o one	d)	none of these

iii) A measure of extent of linear relationship between X_1 with X_2 and X_3

b) partial correlation

d) simple regression

is given by_____.

a)

c)

simple correlation

multiple correlation

Ca

iv)		Karl Pearson's correlation ficients.	coe	efficient is of regression
	a)	A.M.	b)	H.M.
	c)	G.M.	d)	median
v)	Spe	arman's rank correlation coef	ficie	nt is equal to one if
	a)	$\sum di^2 = 0$	b)	$\sum di^2 > 0$
	c)	$\sum di^2 < 0$	d)	none of these
vi)	The	residual X _{1.23} is called as res	idual	of order
	a)	0	b)	1
	c)	2	d)	3
vii)	If R	$R_{1.23} = 0$ then values of r_{12} and	r ₁₃ ar	re respectively.
	a)	0 and 1	b)	1 and 0
1,51	c)	0 and 0	d)	1 and 1
viii)	Wh	ich of the following coefficier	nt lies	s between -1 to 1.
	a)	simple correlation coefficient	tb)	rank correlation coefficient
	c)	partial correlation coefficient	d)	
ix)	The	two regression equations inte	ersect	at
	a)	(0,0)	b)	$(\overline{X}, \overline{Y})$
	c)	(b_{yx}, b_{xy})	d)	$(0,\overline{Y})$
x)		nere exit perfect correlation ficient 'r' is	betwo	een X and Y then correlation
	a)	1	b)	0
	c)	-1	d)	-1 or 1
	1			

[20]

Q2) Attempt any two of following.

- Define Karl Pearson coefficient of correlation, State and prove any two properties of the same.
- b) Derive the equation of regression line of Y on X by method of least square.
- c) Define multiple and partial correlation coefficient for trivariate data. State their limits and necessary and sufficient condition for the three regression planes coincide.

Q3) Attempt any four of the following.

[20]

- a) Write a note on scatter diagram.
- b) Define regression coefficients. State properties of regression coefficients.
- c) In a trivariate data $r_{12} = 0.6$, $r_{13} = 0.4$ and $r_{23} = 0.5$ are these values consistent.
- d) If correlation coefficient between x and y is 0.7 calculate correlation coefficient between.
 - i) x + 10 and y 20
 - ii) 2x and 4y

(a)

iii)
$$\frac{10-x}{3}$$
 and $\frac{y+20}{5}$

- e) If x and y are uncorrelated variables and var(x) = k, var(y) = 2. Find value of k such that var(3x y) = 25.
- f) If $r_{12} = r_{13} = r_{23} = \rho$ show that $R_{1.23}^2 = \frac{2\rho^2}{1+\rho}$

Total No.	of Pages	:	3
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Seat	
No.	

B.C.S. (Part - I) (Semester - II) Examination, November - 2015 STATISTICS (Paper - III)

Descriptive Statistics							
				Code: 59			
Day and Date: Friday, 20 - 11 - 2015 Time: 3.00 p.m. to 5.00 p.m. Instructions: 1) All questions are Compulsory. 2) Figures to right indicate Full marks. 3) Use of calculator and statistical table is allowed.							
QI) Choose the correct alternative. [10]							
 i) If the correlation coefficient between X and Y is -0.65 the correlatio coefficient between 4 + 2X and 3Y + 1 is 							
	a)	0.65		b)	0.35		
	c)	-0.65		d)	-0.35		
ii)	If o	one regre	ession coeffic	ient is gre	eater than one, then other must		
	a)	less tha	n one	b)	greater than one		
	c)	equal to	one	d)	none of these		
iii)	A m	neasure o iven by_	f extent of line	ear relation	ship between X_1 with X_2 and X_3		
	a)	simple of	correlation	b)	partial correlation		
	c)	multiple	correlation	d)	simple regression		

iv)	 iv) The Karl Pearson's correlation coefficient is of regression coefficients. 						
	a)	A.M.	b)	H.M.			
	c)	G.M.	d)	median			
v)	Spe	arman's rank correlation coeffi	icient	is equal to one if			
	a)	$\sum di^2 = 0$	b)	$\sum di^2 > 0$			
	c)	$\sum di^2 < 0$	d)	none of these			
vi)	The	e residual X _{1.23} is called as resi	idual	of order			
	a)	0	b)	1			
	c)	2	d)	3			
vii) If	$R_{1.23} = 0$ then values of r_{12} and	r ₁₃ are	e respectively.			
	a)	0 and 1	b)	1 and 0			
	c)	0 and 0	d)	1 and 1			
vi	ii) W	hich of the following coefficie	nt lie	s between -1 to 1.			
	a)	simple correlation coefficier	nt b)	rank correlation coefficient			
	c)	partial correlation coefficien	nt d)	all of these			
ix) Th	ne two regression equations in	tersec	et at			
	a)	(0,0)	b)	$(\overline{X},\overline{Y})$			
	c)	(b_{yx}, b_{xy})	d)	$(0,\overline{Y})$			
x)	If co	there exit perfect correlation efficient 'r' is	n bet	ween X and Y then correlation			
	a)	1	b)	0			
	c)	-1	d)	-1 or 1			

[20]

Q2) Attempt any two of following.

- Define Karl Pearson coefficient of correlation, State and prove any two properties of the same.
- b) Derive the equation of regression line of Y on X by method of least square.
- c) Define multiple and partial correlation coefficient for trivariate data. State their limits and necessary and sufficient condition for the three regression planes coincide.

Q3) Attempt any four of the following.

[20]

- a) Write a note on scatter diagram.
- b) Define regression coefficients. State properties of regression coefficients.
- c) In a trivariate data $r_{12} = 0.6$, $r_{13} = 0.4$ and $r_{23} = 0.5$ are these values consistent.
- d) If correlation coefficient between x and y is 0.7 calculate correlation coefficient between.
 - i) x + 10 and y 20
 - ii) 2x and 4y

iii)
$$\frac{10-x}{3}$$
 and $\frac{y+20}{5}$

- e) If x and y are uncorrelated variables and var(x) = k, var(y) = 2. Find value of k such that var(3x y) = 25.
- f) If $r_{12} = r_{13} = r_{23} = \rho$ show that $R_{1.23}^2 = \frac{2\rho^2}{1+\rho}$

Seat	
No.	

Total No. of Pages: 3

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

		_	STATIST	ICS	
		Descripti	ve Statistics	- II ((Paper - III)
		1	Sub. Code ·	597 [°]	(10
Day and 1 Time: 12	Date : I	Monday, 11 - 0 on to 2.00 p.m.			Total Marks: 50
Instruction	ns:	1) All questio 2) Figures to	ns are compulso	full .	marks. table is allowed.
Q1) Cho	ose the	e correct altern	1441		
a)	between iii)	variables X a een X and Y is Zero Positive	nd Y change in	ii) iv)	Nagative
. b)	i) (iii) ((4, 5) (4, 1)	2007	ii) iv)	
c)	i) 5	easure of external les X_2 and X_3 Simple correlate Multiple correlated	tion		Partial correlation
d)	i) 1 ii) (iii) 1	e correlation Perpendicular Coincide Parallel to each Do not exist	to each other	=0, t	then the two regression lines

e) .	If r	$=r_{13}=0$ then the multiple co	rrelatio	n coeff	icient R _{1,23} =_			
		-1	ii)	1	the second secon	.0:		
	200) (Semester - II) - 0	,	None	of these	1		
		Арт В - 2016						
f)	Ifco	orrelation coefficient between				on hativaa		
	-X a	and -Y is - noting) II - sol	toites	nuite:	then correlatio	on octween		
	i)	-0.8	io ii) d	0.8	1963(1			
	iii)	0.64						
			Zoro.	+ 4(1 - 1)	ne : Nonday.	ay and Da		
g)	If b	$b_{xy} = -1/9$ and $b_{xy} = -1$ then co	orrelatio	n coeffi	UUL 61 GOON (). Cient r is	12.0° (m)		
			10 miles 11 miles	1/9		anolizmaien		
	iii)	1/3	iv)	141/3 11	(C) (E)			
h)	Wh	ich of the following coeffici	ent have	e range -	- 1 to 12			
	1) Simple correlation coefficient							
	ii)	Rank correlation coefficien	nt		oluaisi e dita. Regera Newsoli	10-		
	iii)	Partial correlation coefficie	ent		one (
	iv)	All the above						
i)	Ifr	ank correlation coefficient in	Webs to	a				
٠,	i)	ank correlation coefficient is All differences of ranks are	equal to	o 1, it me	eans that:			
	ii)	Ranks in each pair are equ		0				
	iii)	Ranks in each pair are not						
	iv)	None of these	cquai	A.V.				
		THE PERSON SERVICES						
j)	If X	X and Y are uncorrelated var	iables t	hen Va	(Xr			
	i)	Var (X)+Var (Y)		nen var	(X-Y)=	·		
	ii)	Var (X)–Var (Y)						
	iii)	Var (X)+Var (Y)+2cov (X	Y)					
	iv)	None of these						

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Q2) Attempt any two of the follwing:

[20]

- Define regression. Derive the regression equation Y on X using least a)
- Define Karl Pearson correlation coefficient. State and prove any two b) properties of correlation coefficient.
- For a trivariate data on X₁, X₂, X₃ is as follows: c)

mean(
$$X_1$$
)= 15.9, mean(X_2)= 3.67, mean(X_3)= 5.97
 σ_1 = 1.71, σ_2 = 1.29, σ_3 = 3.09
 r_{12} = -0.66, r_{13} =-0.13, r_{23} =0.6

Obtain the equation of plane of regression of X₂ on X₁ and X₃. Also estimate X_2 when $X_1=14$ and $X_3=6$.

Q3)Attempt any four of the following:

[20]

- Write a note on scatter diagram. a)
- Discuss the effect of change of origin and scale on regression coefficients. b)
- If $r_{12} = r_{13} = r_{23} = \rho$, then show that $R_{1,23}^2 = \frac{2\rho^2}{1+\rho}$. c)
- Spearman's rank correlation coefficient between X and Y is 2/3. The d) sum of squares of difference between ranks is 55, assuming that no rank is repeated, find numbers of pairs in the series.
- e) Is the following data consistent?

$$r_{12}=0.6$$
, $r_{13}=-0.9$ $r_{23}=0.8$

Find correlation between X and Y from following data. f)

$$n = 25$$
, $\Sigma X = 75$, $\Sigma Y = 100$, $\Sigma X^2 = 250$, $\Sigma Y^2 = 500$ $\Sigma XY = 325$.

Total No. of	Pages	:	3	
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Seat No.

B.C.S. (Part - I) (Semester - II) Examination, April - 2017

STATISTICS (Paper - III) **Descriptive Statistics**

			Sub. Code: 5	5971	0
Day and Date: Time: 12.00 no Instructions:			Wednesday, 26 - 04 - 2017 on to 02.00 p.m. 1) All questions are compulsory 2) Figures to right indicate full i 3) Use of calculator and statistic	narks	
Q1)	Cho	ose th	ne correct alternative :		[10]
	a)	The	concept of rank correlation wa	s give	en by
		i)	Galton	ii)	Kendall
		iii)	Spearman	iv)	None of these
	b)		ations of two regression lines ar nd Y are	eX+	Y = 8, $X - Y = 4$, then mean of
		i)	(2, 6)	ii)	(6, 2)
		iii)	(8, 4)	iv)	(0, 2)
	c)	With	h usual notations, the regression	equa	tion X_2 on X_1 and X_3 is
		i)	$X_2 = b_{21.3} X_1 + b_{23.1} X_3$	ii)	$X_2 = b_{12.3} X_1 + b_{13.2} X_3$
			2 12 1 15 5		None of these
	d)	If to	wo regression coefficients are fficient is	-1.2	and -0.3 , then the correlation
		i)	- 0.36	ii)	- 0.6
		iii)	- 0.06	iv)	0.6
	e)	Ifc	orrelation coefficient $r = \pm 1$, then	n the	angle between two lines is
	,	i)	90°	ii)	45°
		iii)	0°	11)	30°
	f)	Ifr	ank in each pair are equal then	rank o	correlation coefficient is
	-)	i)	1	ii)	-1
		iii)	0	iv)	None of these
1	<i>/</i> ·				P.T.O.

g)	g) correlation coefficient lies between -1 and + 1.									
	125	i)	Partial	Ĺ		ii)	Rank			
		iii)	Simpl	e		iv)	All the	above	×	
h	1)		e multi ficient		egression planes	s coincide 	if the d	eterminan	t of corre	lation
		i)	1			ii)	0			
		iii)	Positi	ive		iv)	Negativ	ve .		
ij)	If R	R _{1.23} =0	then	$r_{12} = r_{13} = $					
		i)	1			ii)	0.5	107		
		iii)	-1			iv)	0			
j	j)		If correlation coefficient between X and Y is 0.8, then correlation coefficient between -X+5 and 3Y+5 is							
		i)	0.8			ii)	0			
		iii)	- 0.8	3		iv)	2.4			
Q2)	Att	empt	any tv	vo of	the following:	587				[20]
	a)	De	rive th	e regi	ession equation	Y on X	using lea	ast square	method.	
	b)	 Define correlation. Explain different types and different methods to stream correlation. 							o study	
	c)	Th	e giver	ı data	related with 3 v	ariables:				
		me σ ₃ :	ean (X ₁ =4.5, r	=55	.95, mean(X ₂)= 56, r ₁₃ =0.97, r ₂	=51.48, m =0.58.	ean(X ₃)	=56.03, σ	₁ =2.26, o	₅₂ =4.40
		Fin	nd:	i)	the multiple re	egression	equatio	on X ₃ on X	and X	.,
				ii)	value of X ₃ w				12	1000
				iii)	Var (X _{3.12}).			- 1772 - 1772		

Q3) Attempt any four of the following:

- a) Show that correlation coefficient is geometric mean of regression coefficients.
- b) Explain r = 0, r = -1 and r = +1 using scatter diagram.
- c) Compute $R_{2.13}$, $r_{23.1}$ if $r_{12} = 0.59$, $r_{13} = 0.46$, $r_{23} = 0.77$.
- d) Calculate Karl Pearson's correlation coefficient for data given below. n = 12, $\Sigma x = 30$, $\Sigma y = 5$, $\Sigma x^2 = 670$, $\Sigma y^2 = 285$, $\Sigma xy = 334$
- e) Discuss effect of change of origin and scale on regression coefficients.
- f) Prove or disprove if $R_{1.23} = 0$ then $R_{2.13} = 0$.

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Total	No.	of	Pages	:	2
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Seat		_
No.	•	

B.C.S. (Part - I) (Semester - II) Examination, November - 2017

STATISTICS Descriptive Statistics-II (Paper-III) Sub. Code: 59710 Day and Date: Tuesday, 07 - 11 - 2017 Total Marks: 50 Time: 3.00 p.m. to 5.00 p.m. Instructions: 1) All questions are compulsory. Figures to right indicate full marks. 2) Use of calculator and statistical table is allowed. 3) Q1) Choose the correct alternative: [10]If X and y are independent variables then correlation coefficient between them is i) Maximum ii) Minimum iii) Zero iv) -1 or 1 The order of residual X_{1,234} is _ b) i) 3 (ii iv) None of these The multiple correlation coefficient lies between c) -1 to 1 i) 0 to 1 iii) 0 to ∞ iv) $-\infty$ to $+\infty$ If byx=-1/4 and bxy=-1 then correlation coefficient r is ii) -0.50.5 i) iv) -0.25 iii) 0.25 If r=0, then angle between two regression lines is e) 45° 90° i) iv) 180° iii) 0° If $R_{1.23} = 1$ then $R_{2.13}$ and $R_{3.12} =$ f)

- ii) i) 0.5 iv) None of these Given r(X, Y)=0.9, then r(2X+1, Y+3) is
- g) -1.91.9
 - iv) 0.9 iii) -0.9

h)	Spearman's rank correlat	ion coefficien	nt (R)=1, if	··
	i) $\sum di^2 = 0$		$\sum di^2 = 1$	
	iii) $\sum di^2 > 0$	iv)	$\sum di^2 < 0$	
i)	The partial correlation coe	efficient is ind	lependent of change of	
	i) Origin	ii)	Scale	
	iii) Origin and Scale	iv)		
j)	Both regression lines inte	ersect at	Troiting of Burner source	
	i) Origin	ii)	Mean of X and Y	
	iii) Right angle	iv)		
	0 00	10)	None of these	
Q2) Atte	empt any two of the following	no·		120
a)	What is correlation? Defi	ine Karl Pears	on's correlation coefficient	[20
	show that it lies between -	-1 and 1.	on a correlation coefficient	and
b)	Derive the equation of regr	ession line of V	on X using least square metl	L _ 1
c)	Subtant the collect of Will	llible and partic	regreccion Ct-4-41	
	Secondary educations for	Λ_1 , Λ_2 and Λ	State mean and womin-	iple of
	residuals for 3 equations	$X_1, X_2 \text{ and } X_3.$	*	
Q3) Atte	empt any four of the followi	no.		
a)	Write a short note on scat		[3	20]
b)	If $r_{12} = r_{13} = r_{23} = \rho$ then show	w that		
	i) $R^2_{122} = 2\rho^2/(1+\rho)$	ii)	$r_{1.23} = \rho/(1+\rho)$	
c)	The regression equations	are 4X-5Y+33	$^{1}_{1.23}$ - $^{-}$ P/(1+ ρ) =0 and 20X-9Y-107=0. Find	
	i) Regression coefficie	nts (b, and b) Find	
	ii) $r(X, Y)$.	. ,		
d)	Discuss effect of change of	forigin and sca	ale on correlation coefficient (
e)				
f)	For a bivariate data mean(x	(x)=60, mean $(y)=$	$a_{13} = 0.7$, $a_{23} = 0.65$. =28, $b_{yx} = -1.5$, $b_{xy} = -0.2$. Estima	
	i) value of y for $x=60$	ii)	value of x for $y=30$	te
	4	4 4		
	,	7 7		

Total	No.	of Pages	:	2
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Seat		-
No.	1540	

B.C.S. (Part - I) (Semester - II) Examination, November - 2017 STATISTICS

100		-		STATIST			
		Des	scriptive	Statistic	s-II	(Paper-III)	
			S	ub. Code:	597	10	
- IIIC . 5,	oo p.r	: Tuesda n. to 5.0	ν 07 11	2017			Total Marks: 50
Instructio	ns:	2) F	igures to rig	are compulso tht indicate fu ator and statis	ll mar	ks. able is allowed.	
Q1) Cho	ose t	he corre	ect alternat	ive.			
a)	IfX	and y a	re indepen	dent variable	s tha		[10]
¥ .	ther	n is		· ·	s the	i correlation co	[10] efficient between
	i)	Maxin	num		ii)	Minimum	
	iii)	Zero	*		iv)		
b)	The	order	of residual	X _{1.234} is	,	. 0. 1	
	i)	3		1.234	ii)	2	
	iii)	1	8		iv)	None of these	
c)	The	multip	le correlati	on coefficier	nt lies	between	: @:
	i)	-1 to 1			ii)	0 to 1	•
	iii)	0 to ∞			iv)	-∞ to +∞	家
d)	If by	yx = -1/4	and bxy=	-1 then corre	lation	coefficient r is	
	i)	-0.5			ii)	0.5	•
	iii)	0.25			iv)	-0.25	
e)	If r=	r=0, then angle between two regression lines is					
	i)	90°			ii)	45°	
	iii)	0°			iv)	180°	
f)	If R	=1 t	hen R _{2.13} a	$R_{3.12} = $ _			
	i)	0.5			ii)	0	
	iii)	1			iv)	None of these	
g)	Give	en r(X,	Y)=0.9, th	en r(2X+1, '			
87	i)	1.9			ii)	-1.9	
	iii)	-0.9			iv)	0.9	
	_,						

	h)	Spearman's rank correlation coefficient (R)=1, if					
		i)	$\sum di^2 = 0$		$\sum di^2 = 1$		
		iii)	$\sum di^2 > 0$	iv)	$\sum di^2 < 0$		
	i)	The	The partial correlation coefficient is independent of change of				
		i)	Origin	ii)	Scale		
		iii)	Origin and Scale	iv)	Neither origin nor scale		
	j)	Bot	h regression lines intersect at		•		
		i)	Origin	ii)	Mean of X and Y		
2		iii)	Right angle	iv)	None of these		
Q2)	Atte	empt	any two of the following:		[20]		
	a)	Wh	What is correlation? Define Karl Pearson's correlation coefficient and show that it lies between -1 and 1.				
	b)				Y on X using least square method.		
	c)	reg	Explain the concept of multiple and partial regression. State three multipregression equations for X_1 , X_2 and X_3 . State mean and variance residuals for 3 equations X_1 , X_2 and X_3 .				
Q3)	Att	empt	any four of the following:		[20]		
. ,	a)	Write a short note on scatter diagram.					
	b)		$=r_{13}=r_{23}=\rho$ then show that $R_{123}^2=2\rho^2/(1+\rho)$	ii)	$r_{1,23} = \rho/(1+\rho)$		
	c)	The regression equations are $4X-5Y+33=0$ and $20X-9Y-107=0$. Find i) Regression coefficients $(b_{xy} \text{ and } b_{yx})$ ii) $r(X, Y)$.					
	d)	Die	cuss effect of change of origin	and s	cale on correlation coefficient (r).		
	e)	Are	the given data consistent? r ₁₂	=0.6,	$r_{13}=0.7, r_{23}=0.65.$		
	f)	For i)	a bivariate data mean(x)=60, m value of y for x=60	ean(y ii)	$(y)=28, b_{yx}=-1.5, b_{xy}=-0.2$. Estimate value of x for y=30		
,			4. 4.		-		

ST - 272

Seat			ST - 272
No.			Total No. of Pages: 4
B.Sc.	(Co	omputers Science) (Entire) (Part -I)	(Semester - II)
	-1	Examination, April - 2018	Calle II)
C	0	STATISTICS	W.
	-3	Descriptive Statistics - II (Paper -	în)
		Sub Code: 50710	111)
Day and	Date	·Wod	
11me :12	.00 n	oon to 2.00 p.m.	Total Marks: 50
Instructio	ns:	1) All questions are compulsory.	
		2) Figures to the right indicate full marks.	
		Use of calculator and statistical toble in the	-
Q1) Cho	ose t	the correct alternative:	ed.
a)			[10]
uj	1116	e multiple correlation coefficient lies between	
	i)	0 to 1 ii) -1 to 1	54
	h		1.5461
C	iii)	0 to ∞ iv) -∞ to ∞	- War
b)	The	e correlation coefficient between (X,X) is	3
			 ·
	i)	0 ii) 1	
	iii)	-1 iv) Var(X)	
	1000	,(.)	
c)	Equ X a	nations of two regression lines are $X+Y=8$ and X and Y are	X-Y=4 then mean of
	i)	(2, 6) ii) (8, 4)	
		2 12 2	
	iii)	(6, 2) iv) (0, 2)	1
		(6, 2) iv) (0, 2)	No,
	1	79	A. No.
	1		PTO

d)	If R	$R_{2.13} = 1$ then $R_{2.13} = $					
	i)	0.61	ii)	-1			
	iii)	D	iv)	none of these			
e) Ç	If th	nere exists perfect correlation b	etwe	en X and Y then r(X, Y) is			
		 •					
	i)	1	ii)	0			
	iii)	-1	iv)	-1 or +1			
f)	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	iv)	0.4			
g)	Wh	en correlation coefficient r=0 then	the tv	vo regression lines are			
	i)	parallel to each other		Salar			
C	ii)	perpendicular to each other		3),			
	iii)	Coincident					
	iv)	none of these					
h)	 If three regression planes coincide then determinant of total co coefficient matrix R or Δ is 						
	i)	0	ii)	1,			
	iii)	greater then zero	iv)	greater than 1			
	1	5000		greater than 1			

-2-

ST - 272

1)	0	~	
1)	One can estimate value of Y for a given value of X by using		
	estimate value of Y for a given value of X by using	nσ	
	a given value of A by usi	115	

- line of regression X on Y i)
- line of regression Y on X ii)
- graphical met iii)
- none of these iv)
- j) The concept of rank correlation was given by _
 - Spearman i)

ii) Galton

iii) Mood

iv) none of these

Q2) Attempt any two of the following:

[20]

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

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

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

Q3) Attempt any four of the following:

[20]

State and prove effect of change of origin and scale on Karl Pearson's a) 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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