STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 86 (For candidates admitted from the academic year 2023 – 2024)

B.B.A DEGREE EXAMINATION NOVEMBER 2024 BUSINESS ADMINISTRATION THIRD SEMESTER

COUR PAPE	R : BUSINESS STATISTICS		
SUBJE TIME	ECT CODE : 23BA/AC/BS35 : 3 HOURS MAX. MA	RKS	• 100
Q. No.	SECTION A (5 x 2=10)	CO	KL
	Answer all questions:	00	
1.	What are stem and leaf plots?	1	1
2.	What is another name for Bowley's Skewness?	1	1
3.	Calculate the rank correlation for the following data:	1	1
	X 1 2 3 4		
	Y 4 3 2 1		
4.	When the average of I, II, III and IV Quarters are 42.4, 36.2, 37.8 and 40.2. Compute the Seasonal Index Value.	1	1
5.	In an experiment on pea breeding Mendel obtained the following	1	1
	frequencies of seed: 315 round and yellow, 101 wrinkled and yellow,		
	108 round and green, 32 wrinkled and green. According to this theory of		
	heredity the number should be in proportion 9:3:3:1. Compute the		
	expected frequency.	~~~	
Q. No.	SECTION B (4 x 5=20)	CO	KL
	Answer any four questions:	-	2
5.	Explain Various types of statistical data.	2	2
6.	Discuss on various components in time series. Interpret with relevant	2	2
7	examples.	2	2
7.	Calculate mean, median and mode for the following data pertaining to marks in statistics out of 140 marks for 80 students in a class:	2	2
	Marks more than 0 20 40 60 80 100 120 No. of Students 80 76 50 28 18 9 3		
	No. of Students 80 76 30 28 18 9 3		
8.	Determine the coefficient of Quartile Deviation from the following data.	2	2
0.	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	-	-
	No. of 4 8 16 9 8 3		
	Students		
9.	Obtain the rank correlation coefficient between the variables X and Y	2	2
	from the following pairs of observed values:		
	X 50 55 65 50 55 60 50 65 70 75		
	Y 11 11 11 125 140 11 130 120 11 160		
	0 0 5 5 5		
10.	The number of scooter accidents per month in a certain town was as	2	2
		1	
	follows: 12, 8, 20, 2, 14, 10, 15, 6, 9, 4 use Chi-Square test to determine		
	if these frequencies are in agreement with the belief that accident conditions were the same during 10-month period.		

). No.	SECTI									(4 x 1	.0 =40)		CO	KI
	Answer the following questions:													
11.	(a) Base	ed on th	e frequ	iency	distr	ibution	given be	elow, c	comp	oute the	followi	ng	3	3
	statistic	al meas	ures to	chara	acteri	ize the	distributi	on.						
	i) Co-	efficient	of var	iation	ii)	Inter-o	uartile ra	ange						
	iii) Modal value													
		al Tax	5-10	10-	15	15-20	20-25	25-	-30	30-35	35-4	0		
	Paid (-		
	No. of		18	30	n	46	28	2	0	12	6			
	Mana		10	5	0	40	20	2	U	12	0			
	Ivialia	gers			(OD)									
											1.4			
	(b) The following are some of the particulars of the distribution of weight of boys and girls in a class:										gnt			
	of boys	and gir	ls in a	class:				-1						
					Boys G									
	Numb	Number				100				50				
	Mean	Mean Weight				60 Kg	5			45 kg				
	Varian	ce				9				4				
	a) Find the standard deviation of the combined data.													
12.	/									om the	followi	nσ	3	3
12.	(a) Compute Karl Pearson's coefficient of correlation from the following										10110 101	ing	5	-
121	I data:				300 400 500 600 700									
121	data:	100	2	00	30	0	400	500	6	<u>.00</u>	700			
121	Χ	100		00			400	500			700	_		
	X Y	30	5	0	60) OR)	80	100	1	10	130	the		
	(b) The following 578, 57	30 e specin ng break 2, 570, 3	5 men o ting stu 568, 57	f cop rength 72, 57	60 () oper (in) (8, 57	O R) wires kg. wei 70, 572	80 drawn f	100 From a	1 a lai	rge lot	130 have t			
	(b) The followi 578, 57 Test usi	30 e specin ng break 2, 570, s ing t-sta	men o cing stu 568, 57 tistic v	f cop rength 72, 57 whethe	60 () oper ((in) (8, 57) er the	D R) wires kg. wei 70, 572 e mean	80 drawn f ght): , 596, 54	100 from a 4 g strer	1 a lai	rge lot	130 have t			
13.	(b) The followi 578, 57 Test us taken to	30 e specii ng break 2, 570, 3 ing t-sta b be 578	men o king str 568, 57 tistic v kg. we	f cop rength 72, 57 whethe	60 oper 1 (in 1 78, 57 er the (Test	O R) wires kg. wei 70, 572 e mean @ 5%	80 drawn f ght): , 596, 54 breaking	100 From a 4 g strer signif	1 a lai ngth icano	10 rge lot of the lo ce).	130 have t	be	4	4
	XY(b) The followi578, 57Test usi taken to(a) Fit a	30 e specin ng break 2, 570, 2 ing t-sta b be 578 a straigh	men o cing str 568, 57 tistic v kg. wo	0 f cop rength 72, 57 vheth eight trend	60 oper 1 (in 1 8, 57 er the (Test by the	OR) wires kg. wei 70, 572 e mean (@ 5%) he met	drawn f ght): , 596, 54 breaking level of nod of le	100 from a 4 g strer signif	1 a lan ngth icano uares	10 rge lot of the loc ce). s to the :	130 have t ot may followi	be ng	4	4
	XY(b) The following578, 57Test using taken to (a) Fit and data. A	30 e specin ng break 2, 570, 2 ing t-sta b be 578 a straigh ssuming	men o king str 568, 57 tistic v kg. wo it-line	0 f coprength 72, 57 whether eight trend he sar	60 oper (in 1 8, 57 er the (Test by the ne ra	OR) wires kg. wei 70, 572 e mean @ 5% he methate of c	drawn f ght): , 596, 54 breaking level of nod of le hange co	100 From a g strer signifi ast sq pontinu	1 a lan ngth icano uares	10 rge lot of the loc ce). s to the :	130 have t ot may followi	be ng	4	4
	XY(b) The following578, 57Test using taken to (a) Fit and data. A	30 e specin ng break 2, 570, 2 ing t-sta b be 578 a straigh ssuming	men o king str 568, 57 tistic v kg. wo it-line	0 f coprength 72, 57 whether eight trend he sar	60 oper (in 1 8, 57 er the (Test by the ne ra	OR) wires kg. wei 70, 572 e mean @ 5% he methate of c	drawn f ght): , 596, 54 breaking level of nod of le	100 From a g strer signifi ast sq pontinu	1 a lan ngth icano uares	10 rge lot of the loc ce). s to the :	130 have t ot may followi	be ng	4	4
	XY(b) The followi578, 57Test usi taken to(a) Fit a data. A predicte	30 e specin ng break 2, 570, 2 ing t-sta b be 578 a straigh ssuming ed earnin	men o king str 568, 57 tistic v kg. wo it-line	0 f coprength 72, 57 whether eight trend he sar	60 oper (in 1 8, 57 er the (Test by the ne ra	OR) wires kg. wei 70, 572 e mean @ 5% he methate of c	drawn f ght): , 596, 54 breaking level of nod of le hange co	100 From a g strer signifi ast sq pontinu	1 a lan ngth icano uares	10 rge lot of the loc ce). s to the :	130 have t ot may followi	be ng	4	4
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	XY(b) The followi578, 57Test usi taken to(a) Fit a data. A predicte	30 e specin ng break 2, 570, 2 ing t-sta b be 578 a straigh ssuming ed earnin	men o king stu 568, 57 tistic v kg. wo tt-line that tu ng (Rs.	0 f cop rength 72, 57 whethe eight of trend he sar in lal	60 oper 1 (in 1 8, 57 er the (Test by the ne ra kh) f	$\begin{array}{c c} \hline \\ \hline $	drawn f ght): , 596, 54 breaking level of nod of le hange co year 2014	100 rom a g strer signifi ast sq ontinue l?	a lan ngth icano uares es, w	10 rge lot of the loc ce). s to the :	130 have t ot may followi	be ng	4	4
	X Y (b) The followi 578, 57 Test us taken to (a) Fit a data. A predicte	30 e specin ng break 2, 570, 3 ing t-sta b be 578 a straigh ssuming ed earnin	$\begin{array}{c c} 5 \\ men & o \\ sing str \\ 568, 57 \\ tistic v \\ kg. we \\ kg. we \\ tt-line \\ s that the the second stress of the second stress of$	0 f cop rength 72, 57 vhethe eight (trend he sar in lal 9002	60 oper 1 (in 1 8, 57 er the (Test by the ne ra kh) f	$\begin{array}{c c} \hline OR\\ wires\\ kg. wei 70, 572 e mean \underline{@ 5\%}he methate of cor the y\underline{@ 000}$	$\begin{array}{c c} 80 \\ drawn f \\ ght): \\ , 596, 54 \\ breaking \\ level of \\ nod of le \\ hange cc \\ rear 2014 \\ 0107 \\$	100 from g stren signifi ast sq ontinue 4?	a lan ngth icano uares es, w 7015	10 rge lot of the loc ce). s to the :	130 have t ot may followi	be ng	4	4
	X Y (b) The followi 578, 57 Test us taken to (a) Fit a data. A predicte	30 e specin ng break 2, 570, 2 ing t-sta b be 578 a straigh ssuming ed earnin	$\begin{array}{c c} 5 \\ men & o \\ sing str \\ 568, 57 \\ tistic v \\ kg. we \\ kg. we \\ tt-line \\ s that the the second stress of the second stress of$	0 f cop rength 72, 57 whether eight of trend he sar in lal	$\begin{array}{r} 60\\ \hline 0 \\ 0 \\ \hline 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$	$\begin{array}{c c} \hline OR\\ wires\\ kg. wei\\ 70, 572\\ e mean\\ \hline @ 5%\\ he meth\\ ate of c or the y \hline \\ 000\\ \hline 72 \end{array}$	drawn f ght): , 596, 54 breaking level of nod of le hange co year 2014	100 rom a g strer signifi ast sq ontinue l?	a lan ngth icano uares es, w	10 rge lot of the loc ce). s to the :	130 have t ot may followi	be ng	4	4
	X Y (b) The followi 578, 57 Test usi taken to (a) Fit a data. A predicto	30 e specin ng break 2, 570, 1 ing t-sta be 578 a straigh ssuming ed earnin	men o cing stu 568, 57 tistic v kg. we tt-line that the stat the s	0 f cop rength 72, 57 vhethe eight (trend he sar in lal 9007 40	$\frac{60}{(0)}$	$\begin{array}{c c} \hline \mathbf{OR} \\ \text{wires} \\ \text{kg. weir} \\ \hline 70, 572 \\ \text{e mean} \\ \hline @ 5\% \\ \text{he methate of c or the y} \\ \hline \text{or the y} \\ \hline 8007 \\ \hline 72 \\ \hline \mathbf{OR} \\ \end{array}$	$\begin{array}{c c} 80 \\ drawn f \\ ght): \\ 596, 54 \\ breaking \\ level of \\ nod of le \\ hange co \\ rear 2014 \\ 600 \\ 69 \\ 60 \\ 69 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60$	100 from a 4 g strer signiff ast sq ontinue 4? 100 87	a lan ngth icano uares es, w 2012 95	10 rge lot of the loc ce). s to the is what wou	130 have t ot may followi ald be t	be ng the	4	4
	XY(b) The followin578, 57Test using taken to(a) Fit is data. A predictor(b) Est	30 e specin ng break 2, 570, 3 ing t-sta b be 578 a straigh ssuming ed earnin arnings	5 men o sing str 568, 57 tistic v kg. we at-line that the sthat the 500 538 100 100 100 100 100 100 100 10	0 f cop rength 72, 57 vhethe eight (trend he sar in lal 9007 40	$\frac{60}{(0)}$	$\begin{array}{c c} \hline \mathbf{OR} \\ \text{wires} \\ \text{kg. weir} \\ \hline 70, 572 \\ \text{e mean} \\ \hline @ 5\% \\ \text{he methate of c or the y} \\ \hline \text{or the y} \\ \hline 8007 \\ \hline 72 \\ \hline \mathbf{OR} \\ \end{array}$	$\begin{array}{c c} 80 \\ drawn f \\ ght): \\ , 596, 54 \\ breaking \\ level of \\ nod of le \\ hange cc \\ rear 2014 \\ 0107 \\$	100 from a 4 g strer signiff ast sq ontinue 4? 100 87	a lan ngth icano uares es, w 2012 95	10 rge lot of the loc ce). s to the is what wou	130 have t ot may followi ald be t	be ng the	4	4
	XY(b) The followin578, 57Test using taken to(a) Fit is data. A predictor(b) Est	30 e specin ng break 2, 570, 1 ing t-sta be 578 a straigh ssuming ed earnin	5 men o sing str 568, 57 tistic v kg. we at-line that the sthat the 500 538 100 100 100 100 100 100 100 10	0 f cop rength 72, 57 vhethe eight (trend he sar in lal 9007 40	$\frac{60}{(0)}$	$\begin{array}{c c} \hline \mathbf{OR} \\ \text{wires} \\ \text{kg. weir} \\ \hline 70, 572 \\ \text{e mean} \\ \hline @ 5\% \\ \text{he methate of c or the y} \\ \hline \text{or the y} \\ \hline 8007 \\ \hline 72 \\ \hline \mathbf{OR} \\ \end{array}$	$\begin{array}{c c} 80 \\ drawn f \\ ght): \\ 596, 54 \\ breaking \\ level of \\ nod of le \\ hange co \\ rear 2014 \\ 600 \\ 69 \\ 60 \\ 69 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60$	100 from a 4 g strer signiff ast sq ontinue 4? 100 87	a lan ngth icano uares es, w 2012 95	10 rge lot of the loc ce). s to the is what wou	130 have t ot may followi ald be t	be ng the	4	4
	XY(b) The followin578, 57Test using taken to(a) Fit is data. A predictor(b) Est	30 e specin ng break 2, 570, 3 ing t-sta b be 578 a straigh ssuming ed earnin arnings	5 men o sing str 568, 57 tistic v kg. we at-line that the sthat the 500 538 100 100 100 100 100 100 100 10	0 f cop rength 72, 57 vhethe eight (trend he sar in lal 9007 40	$\frac{60}{(0)}$	$\begin{array}{c c} \hline \mathbf{OR} \\ \text{wires} \\ \text{kg. weir} \\ \hline 70, 572 \\ \text{e mean} \\ \hline @ 5\% \\ \text{he methate of c or the y} \\ \hline \text{or the y} \\ \hline 8007 \\ \hline 72 \\ \hline \mathbf{OR} \\ \end{array}$	$\begin{array}{c c} 80 \\ drawn f \\ ght): \\ 596, 54 \\ breaking \\ level of \\ nod of le \\ hange co \\ rear 2014 \\ 600 \\ 69 \\ 60 \\ 69 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60$	100 from a 4 g strer signiff ast sq ontinue 4? 100 87	a lan ngth icano uares es, w 2012 95	10 rge lot of the loc ce). s to the is what wou	130 have t ot may followi ald be t	be ng the	4	4
	XY(b) The followin578, 57Test using taken to(a) Fit is data. A predictor(b) Est	30 e specin ng break 2, 570, 3 ing t-sta b be 578 a straigh ssuming ed earnin arnings	5 men o sing str 568, 57 tistic v kg. we at-line that the sthat the 500 538 100 100 100 100 100 100 100 10	0 f cop rength 72, 57 vhethe eight (trend he sar in lal 9007 40	$\frac{60}{(0)}$	OR) wires kg. wei 70, 572 e mean 2 @ 5% he meth ate of c or the y 800 72 0R) using th	$\frac{80}{\text{drawn f}}$ $\frac{30}{\text{ght}}$ $\frac{30}{596}, 544$ $\frac{30}{596}, 546$ $\frac{30}{596}$	100 from a 4 g strer signiff ast sq ontinue 4? 100 87	a lan ngth icano uares es, w 2102 95 by t	10 rge lot of the loc ce). s to the is what wou	130 have t ot may followi ald be t	be ng the	4	4

						/3/				2	23BA/A	AC/BS3
14.	(a) A firm selling five products is interested in finding out whether the											4
		e distribute										
		lom sampl		•	-	-						
	informa	-	• • • • •	o sure.		e or ac	, b.,		is the	10110 11119		
	morme		r's group)	Pr	oduc	ts		Total			
			- ~ 8 F	1	2	3	4	5				
		Partners		20	10	30	10	10	80	-		
		Factory we	28	20	10	20	12	90	-			
		Businessm	30	38	20	35	25	148	-			
		Profession	28	20	12	12	10	82				
		Total	106	88	72	77	57	400	-			
	Formul		abla hu						uare te	st. What		
		ate a suit						n-Sqi	uale it			
	conclus	sion you can	ulaw 110	(OR)		suit :						
	(b) Cal	culate Mode	from the	· /		ata h	V ore	unin	a moth	h		
			20-25	25-30		-35	<u>y grc</u> 35-		40-45	1		
	Age	'D	20-23 5	<u>23-30</u> 7				40	<u>40-43</u> 7	45-50		
	NO. 01	Persons	5	/	18		25		/	5		
Q. No.	SECTI	ON D							C	2 x 15=30)	CO	KL
X		r any two q	uestions:						(-		00	
15.		ly sales data			in a	supe	r baz	zar ar	e prese	nted in the	5	5
10.		ng table for				sape	1 0 42	an ar	e prese		Ũ	Ũ
	10110 101	Year				iarte	re					
		Itai	Ι			<u>141 (C</u>	III		IV			
		2010	60		80		72		<u> </u>			
		2010	68		104		100		88			
		2011										
			80		116		108		96			
		2013	108		152		136		124			
	2014 160 184 172 164											
	Calculate the seasonal index for each of the four quarters using											
		ratio-to-tren	id method									
16.	From the following data obtain the two-regression equation, find the										5	5
		value of Y which should correspond on an average to $X = 6.2$									_	_
		X	6	2		10		4	8			
		Y	9	11		5		8	7			
		-		11		5		0	/			
17.	Four m	achines A.	B. C. D a	re used	l to r	orodu	ice a	certa	in kind	of cotton	5	5
17.	Four machines A, B, C, D are used to produce a certain kind of cotton fabrics. The number of flaws in each machine are counted, with the											U
		ng result.	or or ma		uen	muer		ure (o unice u	, , , , , , , , , , , , , , , , , , , ,		
	10110 101		A	В		C		D				
			8	12	_	<u>c</u> 18		13				
			-				-	-				
			10	11	-	12	_	9				
			12	9	-	16		12				
			8	14		6		16				
			7	4		8		15				
	Do you	think that	there is s	ignifica	int d	iffere	ence	in th	e perfo	rmance of		
	•	r machines?		0								
			Compute	Olic-w	ay r	MU	٧A.					

13/