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

## B. COM. (C.S.) DEGREE EXAMINATION - NOVEMBER 2024 CORPORATE SECRETARYSHIP FIRST SEMESTER

COURSE	:	ALLIED CORE	
PAPER	:	QUANTITATIVE TECHNI	<b>QUES FOR BUSINESS</b>
COURSE CODE	:	23CO/AC/QT15	
TIME	:	3 HOURS	MAX. MARKS:

	SECTION A						
Q. No.	Answer all questions: (5 x 2 =10)					CO	KL
1	What is categorical data?					1	1
2	State any two differences be	tween correlation	ion and	regression	1.	1	1
3	A random sample of 18 pair					1	1
	correlation coefficient of 0.2	37.Find whethe	r the var	riables in	the population are		
	uncorrelated.						
4	If $n = 100$ , $\overline{X} = 1570 \& \sigma =$					1	1
5	Shift the origin of the follow	0 1	rom 201	6 to 2018	8:	1	1
	Yc = 74.5 + 8.4X (Orig	in: 2016)					
		SECTION	NB				
Q. No.	Answer any four question				$(4 \times 5 = 20)$	CO	KL
6	Briefly explain the conditio	ns for applying	chi-squ	are test.		2	2
7	The following series of obs	ervations is kno	own to h	ave a bus	siness cycle with a	2	2
	period of 4 years. Find the f	our yearly mov	ing aver	age meth	lod.		
	Year 2008 2009 20						
	Production 506 620 10	36 673 58	8 696	1116	738 663 773		
	('000 tons)						
8	Given the following inform	ation:				2	2
	$r_{12} = 0.20, r_{13} = 0.35, r_{23} = 0.10, r_{14} = 0.48, r_{24} = 0.32, r_{34} = 0.15$ . Find $r_{41.23}$						
9	Determine the seasonal indi	ces for the vari	ous quai	ters from	the given data:	2	2
-		to Moving Av	-		8		
		0	ter III	Quarte	r IV		
	2015	98.7		102.56			
	2016 106.65 94.27	100.3	1	98.7			
	2017 107.53 90.91	96.2	2	104.66			
	2018 112.5 90.84	91.4	2	103.8			
	2019 110.0 94.11	-		-			
10	Compute Karl Pearson's coefficient of correlation from the following data,					2	2
	using 20 as the working mean for price and 70 as the working mean for						
	demand:						
	Price: 14 16 17	18 19	20	21	22 23		
	Demand: 84 78 70 75 66 67 62 58 60						

100

11	A random sample of 1000 workers from South India shows that their mean wages are Rs.47 per week with a standard deviation of Rs.28. A random sample of 1500 workers from North India gives a mean wage of Rs.49 per	2	2			
	week with a standard deviation of Rs.40. Is there any significant difference between their mean levels of wages?					
	SECTION C					
Q. No.	Answer the following questions: (4 x 10 =40)					
12 a.	The following data relate to advertisement expenditure (in lakh of rupees) and the corresponding sales (in crore of rupees):	3	3			
	Advertisement Expenditure 10 12 15 23 20   Sales 14 17 23 25 21					
	Calculate the regression equation of X on Y and also estimate the advertisement expenditure for sales target of Rs.35 Crore (or)					
12 b.	The simple correlation co-efficient between temperature, corn yield and rainfall are $r_{12} = 0.59$ , $r_{13} = 0.46$ and $r_{23} = 0.77$ . Calculate the partial correlation coefficients $r_{12.3}$ , $r_{23.1}$ and $r_{13.2}$ .	3	3			
13 a.	Determine the trend using 5 yearly moving averages for the following data:Year2005200620072008200920102011201220132014Production21222325242225262726(in '000 tonnes)	3	3			
13 b.	(or)   The number of units produced during 2007-14 are given below:   Year 2007 2008 2009 2011 2012 2013 2014   Production 56 55 51 47 42 38 35 32	3	3			
	<ul><li>(i) Fit a straight line trend and obtain the trend values.</li><li>(ii) Eliminate the Trend. What components of time series are thus left over?</li><li>(iii) What is the monthly increase in the number of units produced?</li></ul>					
14 a.	Certain pesticide is packed into bags by a machine. A random sample of 10 bags is drawn and their contents are found to weigh (in kgs) as follows: 50 49 52 44 45 48 46 45 49 45 Test if the average packing can be taken to be 50 kgs. (or)	4	4			
14 b.	A group of 5 patients treated with medicine 'A' weighed 42, 39, 48, 60 and 41 kgs; second group of 7 patients from the same hospital treated with medicine 'B' weighed 38, 42, 56, 64, 68, 69 and 62 kgs. Do you agree with the claim that medicine 'B' increased the weight significantly?	4	4			

15 a.	Out of 8000 graduates in a town, 800 are female, out of 1600 graduate employees 120 are female. Use $\varkappa^2$ to determine if any distinction is made in appointment on the basis of sex.					4	4	
15b.	(or)						4	4
150.	Random samples are drawn from two populations and the following results were obtained:					nowing results	4	4
	Sample X: 16		20 21 22	24 26 27				
	Sample X: 10 Sample Y: 19				5 36			
	-					o samples have		
	same variance	1	opulations			o sampros na c		
			SEC	<b>FION D</b>				
Q. No.	Answer any	-	ns:			$(2 \times 15 = 30)$	СО	KL
16						y on each day of	5	5
				sample of 70	0 births fr	om a recent year		
	is selected, an							
	At a significant		0.01, is then	e enough evid	dence to su	upport the		
	doctor's claim		т		<b>г</b> .	<b>G</b> (		
	Day	Sun Mor		Wed Thur		Sat		
	Frequency	65 103	114	116 115	112	75		
17	Calculate sea	sonal indices	by the me	ethod of link	relatives	for the following	5	5
	data:		•			C		
			Prices (	in Rs.)				
	Year		Quarter					
		Ι	II	III		IV		
	2015	75	86	90		100		
	2016	60	65	72		78		
	2017	54	63	66		72		
	2018	59	80	85		93		
18	The following	t data raprose	nt the num	her of units o	facomm	odity produced	5	5
10	by 3 different					Juity produced	5	5
	Machines	A	-	B	C			
	Workers	11			C			
	X	16		64	40			
	Y	56		72	56			
	Z	12		56	28			
						ferent machine		
	Test (i) whether the mean productivity is the same for the different machine types, and (ii) whether the three workers differ with respect to mean							
	productivity.							

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