LOYOLA COLLEGE (AUTONOMOUS) CHENNAI - 600 034

B.Com. DEGREE EXAMINATION – **ACCOUNTING AND FINANCE**



Max.: 100 Marks

FIRST SEMESTER - NOVEMBER 2024

Dept. No.

Date: 11-11-2024

Time: 01:00 pm-04:00 pm

UCC1AR01 - BUSINESS STATISTICS AND OPERATIONS RESEARCH

					CECT	CIONIA I	(1 0 1/2 (CO1)	
		A A	4h - O		SECI	ION A - K	(1 & K2 (CO1)	/40 2 20)
Q.No	Levels	Answer ALL		nons				(10 x 2 = 20)
1		Define statis		1	, c	1 11	• ,	
2		Write a shor				a saddle po	int.	
3	K1	Recall the m						
4		Solve the ga		the foll	owing	payoff		
			ayer B					
		Player A	1 2					
			6 2					
5		Illustrate the						
6		Contrast bet	tween desc	riptive a	ınd inf	erential dat	a.	
7	17.0		AREA					
	K2	W	$\mathbf{X} \mathbf{X} \mathbf{Y}$	\mathbf{Z}				
		1						
		A 1	17 87 1216 15	16				
		∑ B 9	7 12	6				
		\mathbf{S} 1						
		SALESMAN B 9 1 2 3 1	16 15	12				
		$\begin{array}{c c} \mathbf{z} & 1 \\ \mathbf{D} & 4 \end{array}$	10 12	11				
		Find the total		11 n aget:				
8					of tin	ao corioc W	th suitable examp	Nac
9		Explain the				ic scries w	illi sultable examp	nes.
						t		
10		Find the LP						24
		VI	tamins	Toni	1	Daily rec	uirements in uni	its
			A	<u>X</u>	Y		40	
			A	2	4		40	
			D	3	2		50	
		Cos	t per unit	5	3 ELON	D 1/2 0	17.4 (COA)	
		Amana	4ha O		HON	B – K3 &	K4 (CO2)	/4 40 40
		Answer ALL			1 1	1 . C .1	1 1 .	(4 x 10 = 40)
11							lowing data:	
							or, and you have b sold each day ove	
							_	er the past
		two weeks (Day			cones	Day 8:	45 cones
			Day			cones	Day 8. Day 9:	70 cones
			Day			cones	Day 10:	50 cones
			Day			cones	Day 11:	55 cones
			Day			cones	Day 12:	55 cones
			Day	J.	33	cones	Day 12.	<i>55</i> cones

Day 6: 40 cones Day 13: 65 cones																
Ten competitors in a beauty contest are ranked by 3 judges in the following order: 1st Judge				Day 6	5:	40 c	ones		Da	y 13:		(65 con	es		
Ten competitors in a beauty contest are ranked by 3 judges in the following order: 1st Judge												60 cones				
Ist Judge 2 7 1 5 3 4 8 6 10 9 2nd Judge 10 6 3 8 7 2 9 5 4 1 3rd Judge 2 5 6 9 1 3 7 4 8 10 Use rank correlation coefficient to identify which pair of judges has nearest approach to common taste in beauty. Elucidate the scope and importance of Operations research with examples.					·			[OR]								
Ist Judge 2 7 1 5 3 4 8 6 10 9 2nd Judge 10 6 3 8 7 2 9 5 4 1 3rd Judge 2 5 6 9 1 3 7 4 8 10 Use rank correlation coefficient to identify which pair of judges has nearest approach to common taste in beauty. Elucidate the scope and importance of Operations research with examples.																
2nd Judge	12	K3	Ten comp	etitors in a be	eauty co	ntest are	e rank	ed by	3 jud	ges i	n the	follo	wing	order:		
13 Use rank correlation coefficient to identify which pair of judges has nearest approach to common taste in beauty. 13 Elucidate the scope and importance of Operations research with examples. IOR				1st Jud	ge	2	7	1	5	3	4	8	6	10	9	
Use rank correlation coefficient to identify which pair of judges has nearest approach to common taste in beauty. Elucidate the scope and importance of Operations research with examples. Find the IBFS of the				2nd Jud	ge	10	6	3	8	7	2	9	5	4	1	
Common taste in beauty. Elucidate the seope and importance of Operations research with examples.				3rd Jud	ge	2	5	6	9	1	3	7	4	8	10	
13 Find the IBFS of the			Use rank	correlation co	efficien	t to ider	ntify w	which p	oair o	f jud	ges h	nas ne	arest a	appro	ach to	,
Find the IBFS of the Transportation Problem using: a) Least cost method E				•												
Find the IBFS of the Transportation Problem using: 1	13		Elucidate	the scope and	l import	ance of	Opera		resea	rch w	vith e	examp	oles.			
Transportation Problem using: a) Least cost method b) Vogel's Approximation method EXAMATER B Transportation Problem using: a) Least cost method b) Vogel's Approximation method EXAMATER B Transportation Problem using: a) Least cost method b) Vogel's Approximation method EXAMATER B Transportation Problem using: a) Least cost method b) Vogel's Approximation method EXAMATER B Transportation Problem using: a) Least cost method b) Vogel's Approximation method EXAMATER B Transportation Problem using: a) Least cost method b) Vogel's Approximation EXAMATER B Transportation Problem using: a) Least cost method b) Vogel's Approximation EXAMATER B Transportation Problem using: B			E' 1.1 T	DEC C1				[OR]								
a) Least cost method b) Vogel's Approximation method Z	14				i						Dest	tinati	ion			
b) Vogel's Approximation method Secondaries Secondar					n using:					1	2			_	Availa	able
Requirement 20 25 15 15 15			/		ition		Z		A	7			5 5	5	30	
Requirement 20 25 15 15 15							5			4				5	15	
Requirement 20 25 15 15 15							Ξ		C	5	3	3 .		- 1	10	
Assuming that trend is absent, determine if there is any seasonality in the data given below: \[\begin{array}{c c c c c c c c c c c c c c c c c c c									_						20	
Year																
2018 3.7 4.1 3.3 3.5 2019 3.7 3.9 3.6 3.6 2020 4.0 4.1 3.3 3.1 2021 3.3 4.4 4.0 4.0 What are seasonal indices for various quarters. IOR Fit a straight trend line by the method of least squares and estimate the sales for the year 2012. Year 2002 2003 2004 2005 2006 2007 2008 2009 Production 76 80 130 144 138 120 174 190 Maximize, Z = 3x₁ +2x₂ Subject to the constraints 3x₁ + 2x₂ ≤ 6; 2x₁ + 3x₂ ≤ 6; x₁ and x₂ ≥ 0. Solve graphically IOR Consider the 4*4 game, which represents the payoff matrix of the player A. Solve it optimally. PLAYER B	15		Assuming													
16					1		tei							tei	4	
What are seasonal indices for various quarters. Correct																
Fit a straight trend line by the method of least squares and estimate the sales for the year 2012. Year 2002 2003 2004 2005 2006 2007 2008 2009 Production 76 80 130 144 138 120 174 190 Maximize, $Z = 3x_1 + 2x_2$ Subject to the constraints $3x_1 + 2x_2 \le 6$; $2x_1 + 3x_2 \le 6$; x_1 and $x_2 \ge 0$. Solve graphically IOR Consider the 4*4 game, which represents the payoff matrix of the player A. Solve it optimally. PLAYER B I III III IV EXAMPLE I 5 -3 3 4 Year 2002 2003 2004 2005 2006 2007 2008 2009 IOR Consider the 4*4 game, which represents the payoff matrix of the player A. Solve it optimally. PLAYER B I III III IV EXAMPLE IV -4 5 4 5 EXAMPLE IV -4 EXAMPLE IV -4				2021		3.3			4.4	1			4.0			4.0
Fit a straight trend line by the method of least squares and estimate the sales for the year 2012.			$\overline{\mathbf{W}}$	hat are season	nal indic	es for v	arious	quart	ers.							
$K4 \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$								[OR]								
K4 Year 2002 2003 2004 2005 2006 2007 2008 2009 Production 76 80 130 144 138 120 174 190 Maximize, $Z = 3x_1 + 2x_2$ Subject to the constraints $3x_1 + 2x_2 \le 6$; $2x_1 + 3x_2 \le 6$; x_1 and $x_2 \ge 0$. Solve graphically IOR Consider the 4*4 game, which represents the payoff matrix of the player A. Solve it optimally. PLAYER B	16			ght trend lin	e by the	e metho	d of I	east s	quar	es an	d es	timat	e the	sales	for tl	he year
K4 Production 76 80 130 144 138 120 174 190 17 Maximize, $Z = 3x_1 + 2x_2$ Subject to the constraints $3x_1 + 2x_2 \le 6$; $2x_1 + 3x_2 \le 6$; x_1 and $x_2 \ge 0$. Solve graphically [OR] 18 Consider the $4*4$ game, which represents the payoff matrix of the player A. Solve it optimally. PLAYER B I			2012.				I						1			
Maximize, $Z = 3x_1 + 2x_2$ Subject to the constraints $3x_1 + 2x_2 \le 6$; $2x_1 + 3x_2 \le 6$; x_1 and $x_2 \ge 0$. Solve graphically [OR] Consider the $4*4$ game, which represents the payoff matrix of the player A. Solve it optimally. PLAYER B I II III III IV II -4 5 4 5 III 4 -4 -3 3 SECTION C - K5 & K6 (CO3) Answer ALL the Questions Assess the Karl Pearson's coefficient of skewness from the following data and interpret the results. Income (Rs. Per day) No. of Employees Income (Rs. Per day) No. of Employees				Year	2002	2003	2004	1 20	05	2006	$5 \mid 2$	2007	200	8 20	009	
Maximize, $Z = 3x_1 + 2x_2$ Subject to the constraints $3x_1 + 2x_2 \le 6$; $2x_1 + 3x_2 \le 6$; x_1 and $x_2 \ge 0$. Solve graphically [OR] Consider the $4*4$ game, which represents the payoff matrix of the player A. Solve it optimally. PLAYER B I II III IIV II 5 -3 3 4 4 5 4 5 5 4 5 5 5 5 5 5 5 5 5 5 5				Production	76	80	130	14	.4	138	1	120	174	1 1	90	
Consider the 4*4 game, which represents the payoff matrix of the player A. Solve it optimally. PLAYER B	17	K4	Maximize	$z_1 = 3x_1 + 2x_2$	Subiect	to the o	constr	aints 3	3x ₁ + 3	 2x₂≤	6: 2x	(₁ + 3)	⊥ ∽≤ 6:	 x₁ and	 x₂≥ (0. Solve
Consider the 4*4 game, which represents the payoff matrix of the player A. Solve it optimally. PLAYER B I II III III IV I 5 -3 3 4 III -4 5 4 5 III 4 -4 -3 3 SECTION C - K5 & K6 (CO3) Answer ALL the Questions Assess the Karl Pearson's coefficient of skewness from the following data and interpret the results. Income (Rs. Per day) No. of Employees Income (Rs. Per day) No. of Employees					,				-	-	-,	_	,	•	-	
PLAYER B I II III IV				-				[OR]								
I II III IV	18		Consider	the 4*4 game	, which	represe	nts the	payo	ff ma	trix o	of the	play	er A.	Solve	it opt	imally.
I II III IV																
I II III IV				P	LAYEF	R B										
III 5 -3 3 4 III -4 5 4 5 III 4 -4 -3 3 SECTION C - K5 & K6 (CO3) Answer ALL the Questions (2 x 20 = 40) Assess the Karl Pearson's coefficient of skewness from the following data and interpret the results. Income (Rs. Per day) No. of Employees Income (Rs. Per day) No. of Employees							7									
SECTION C – K5 & K6 (CO3) Answer ALL the Questions Assess the Karl Pearson's coefficient of skewness from the following data and interpret the results. Income (Rs. Per day) No. of Employees Income (Rs. Per day) No. of Employees			. . .													
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SECTION C – K5 & K6 (CO3) Answer ALL the Questions Assess the Karl Pearson's coefficient of skewness from the following data and interpret the results. Income (Rs. Per day) No. of Employees																
Answer ALL the Questions Assess the Karl Pearson's coefficient of skewness from the following data and interpret the results. Income (Rs. Per day) No. of Employees				11 T				& K6	(CC)3)						
Assess the Karl Pearson's coefficient of skewness from the following data and interpret the results. Income (Rs. Per day)		Answ	er ALL the	Questions	200	13110	. 110		. ,	<i>,</i>			(2	x 20 =	40)	
K5 results. Income (Rs. Per day) No. of Employees Income (Rs. Per day) No. of Employees	19				on's coe	efficient	of sk	ewnes	s fro	m th	e fol	lowir				pret the
(Rs. Per day) No. of Employees Income (Rs. Per day) No. of Employees		K5														<u> </u>
(Ks. Per day)				f Emnl	Inc	Income (Rs. Par day)					No. of Employees					
200 and above 150 450 and above 70			(Rs. Per day)						• • • • • • • • • • • • • • • • • • • •				111			
			200 a	and above		150			450	and a	above	e			70	

		250	and above		1	40			500 a	nd abov	re e		30	
		300	and above		100				550 a	nd abov	14			
		350	and above		80				600 a	nd abov	0			
		400	and above		8	80								
							[OR]						
20		Solve th	ne Transportat	ion pro	oblen	n from	facto	ry to	the w	arehous	e and fin	nd the o	ptimal s	olutio
			1	-	W2	W3	W	•	pply				1	
							4	_						
			F1	19	30	50	10	7						
			F2		30	40	60	9						
			F3	40	8	70	20	18						
			Demand	5	8	7	14							
21		a). Analyse the seasonal indices by the ratio to moving average method, from the follodata. – (10 Mark												
		uata.										(10	Marks)	
			Year	1 st	Qua	rter	2 nd	Qua	rter	3 rd Q	uarter		<i>Marks)</i> Quarter	
	K6		Year 2019	1 st	Qua	rter	2 nd	Qua	ırter		uarter 61			
	K6			1 st		rter	2 nd		rter	(Quarter	
	K6		2019	1 st	68	rter	2 nd	62	rter	(61		Quarter 63	
	K6		2019 2020		68 65 68			62 58 63		(61 66 63	4 th (Quarter 63 61 67	
	K6	b). Distir	2019 2020 2021	n secul	68 65 68 lar tre	end, se	easona	62 58 63	ctuatio	ons and	61 66 63 cyclical	4 th (Quarter 63 61 67) DW
	K6	b). Distir	2019 2020 2021 nguish betwee	n secul	68 65 68 lar tre	end, se	easona any g	62 58 63	ctuatio	ons and	61 66 63 cyclical	4 th (Quarter 63 61 67 tions. Ho	ow .
22	K6	b). Disting would	2019 2020 2021 aguish betwee d you measure	en secul e secul	68 65 68 lar tre	end, seend to	easona any g	62 58 63 d fluctiven OR]	ctuatic time s	ons and one eries?	61 66 63 cyclical	4 th (Quarter 63 61 67 tions. Ho	ow larks)
22	K6	b). Disting would	2019 2020 2021 nguish betwee d you measure	en secul e secul	68 65 68 lar tre	end, seend to	easona any g	62 58 63 d fluctiven OR]	ctuatic time s	ons and one eries?	61 66 63 cyclical	4 th (Quarter 63 61 67 tions. Ho	ow larks)
22	K6	b). Disting would	2019 2020 2021 aguish betweed you measure e two regressas from actual	en secul e secul	68 65 68 lar tre ar tre	end, seend to	easona any g	62 58 63 Il fluciven OR]	ctuatic time s	ons and one eries?	61 66 63 cyclical	4 th (Quarter 63 61 67 tions. Ho	ow larks)

Estimate the likely demand when the price is Rs. 20