1FOS 2018 Solve ly Simplex method the following Linear Programming Problem:

Maximize $Z = 3x_1 + 2x_2 + 5x_3$ Subject to the Constraints $21 + 22 + 23 \le 430$ 32,+223 ≤460 21 + 420H1, N2, N3 20. Since the given IPP is maximization problem so converting it directly into standard form by introducing slack variables S1, S2, S3, we have Maximize Z= 3x, +2x, +5x, +0.8, +0.8, +0.83 2,+22,+23+5,=430 Bulyect to $3x_1 + 2x_2 + S_2 = 460$ 21+472+52 = 420 21, 22, 23, 51, 52, 83 20

-	The Initial Basic Feasible Solution is obtained after setting. 91=12=13=0 (mon basic) & S1=430, S2=460, S3=420										
-	of = X	= 2/3	=0 (nen ba	sic) &	S,= 4	130, 5	2 = 46	so, Sa	=420	
	LAN	P .	701 101	WILL G							
	(basic). for which Z=0. The Simplex table for above information is as follows										
	Tre	MATE	3	2	5	0	0	0			
	2 Bas	14	21	2/2	N3	SI	82	83	Ь	0	
<u>a</u>			11	2	1	1	0	0	430	430	
0			3	0	(2)	0	-	0	-	460 230	
0			11	4	0	0	0	1	420	-	
		E CBQU	0	0	0	0	0	0	0		
	-	Cj-Zj	1	2	5	0	0	0			
	19=	7 4			1						
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From above table we have & as entering variable & So as outgoing variable. The Key element is (2). convert it to											
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1	, taxin	00 1/0	siable	2. The	Key Elen	nent	11 (2	J. CB	nvert	it to	
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2	72	-1/4	1	0	1/2	-114	0	100	
5	23	3/2	0	1	0	1/2	0	230	
0	S3	2	0	0	-2	1	1	20 -	
	Zi= EcBaij	7	2	5	1	2	0	1350 -	
	Cj=Cj-Zj	-4	0	0	-1	-2	0		
	. 0 0 0			1-1-1-1		ACC.			
^	Simo all	(0)	40.	100	htima	l con	rditie	mis reached	
Since all $C_j^2 \leq 0$. So optimal condition is reached Max $Z = 1350$ at $x_1 = 0$, $x_2 = 100$, $x_3 = 230$.									
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	S ₂	70	30	40	60	9				
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By Vegel's method an in				و على	ution of the
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D \ D2 → S G (5) 30	D3	10			restrates
	40	60	(2)	1/2/0	[9][9][6][6]
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7 38 (9)	7			18 July	[12][6][5]
a cont		14141			
[2] [22]	[10]		10]		
[21] T	[10]		[0]		
<u> </u>			56]	- 4	
	[10]		607	1	
	[40]		1		
	[46]	12			
	10.5	040 1/	ברעם	- 10×	0 46640
Total transportation cost :	= 13.63 -	0/049	770	10/2	2 1 50/40
	+20 X10) = 13 t	-11-		fa)
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To check for optimality		- 1 1		1 0	
we determine a set of	si ky	S. T. for	eac	M C	cupied
CLU (9,5) CINS DYTY	3 /		13		-
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mo of allocation					
Since C17 = U1+14 => 10=	= UI	C24=1	J2+V	4 =	U2=60
C34= U3+V4 = [20= U3	I CH	= U1+V	7	9 = 10	tv1 =) [= 3
37 33 7					
C32 = U3+V2 = 8 = 20+1	12 => [V2==	12		= 124	
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		1	÷ 40:	2 607	¥3
			1	$\frac{1}{3} = -2$	and the same of th

Nowwe fine cell (i)	l cell ev	aluation	Dij=	cij- (ui	+V;)	for unoccupi
	$\begin{array}{c} 12 = C_{12} \\ 13 = C_{13} \\ 121 = C_{21} \\ 122 = C_{22} \\ 131 = C_{32} \\ 133 = C_{33} \end{array}$	$- (U_1 + V_2)$ $- (U_1 + V_3)$ $- (U_2 + V_1)$ $- (U_2 + V_2)$ $- (U_3 + V_1)$) = 30) = 70) = 30 = 40	0 - (10 - 10) $0 - (10)$ $0 - (60 + 10)$ $0 - (20 - 10)$	(2) = (30) = (9) = (12) = (12) =	32 60 1 -18
Since A	22 = -18	3 < 0 >	o the	Solution	under	c test is not
70	30 +2	2 40 10 (10 3) -2	(2) (2) (602 (2) (2) (1)	0)		
New BFS Total tra	u obtaine	las per a en cost =	1915. +10x2	+30x2+8	3×6+4	10X7+20X2
			-ASS	743 (less	than p	revious one)
S1 13 (5) S2 70 S3 40 Denard 5	D ₂ 30 30 (2) 8 (6)	D3 50. 40 (7) 70.	D4 10 (2) 60 20 (2)	8 supply 7 9 18 34		
					1-	

Again checking for optimality. as done previously, we get (assuming $U_1=0$) $U_1=0$, $V_1=19$, $V_4=10$, $U_3=10$, $V_2=-2$, $V_4=32$, $V_3=+8$ $\Delta_{12}=32$, $\Delta_{13}=3242$, $\Delta_{21}=19$, $\Delta_{24}=18$, $\Delta_{31}=11$, $\Delta_{33}=3252$.

Since all Δ_{ij} 's > 0, we reached an optimal Solution which is also runique.

Plance Minimum transportation (out is Rs 345.743