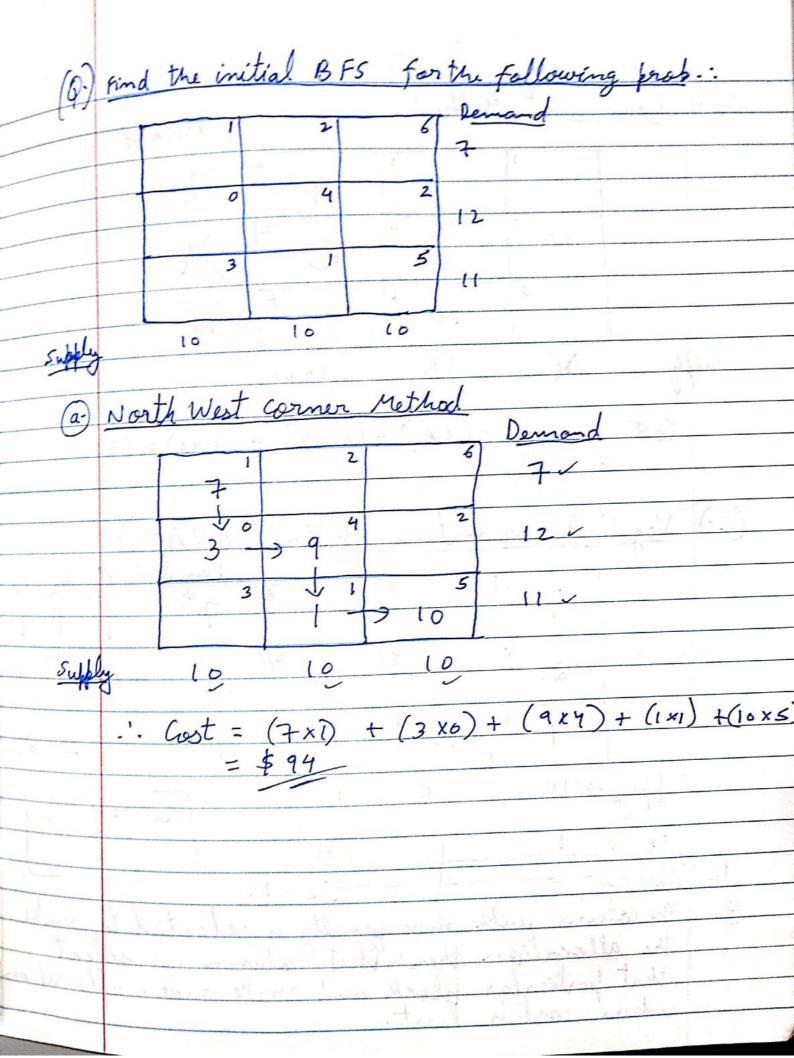
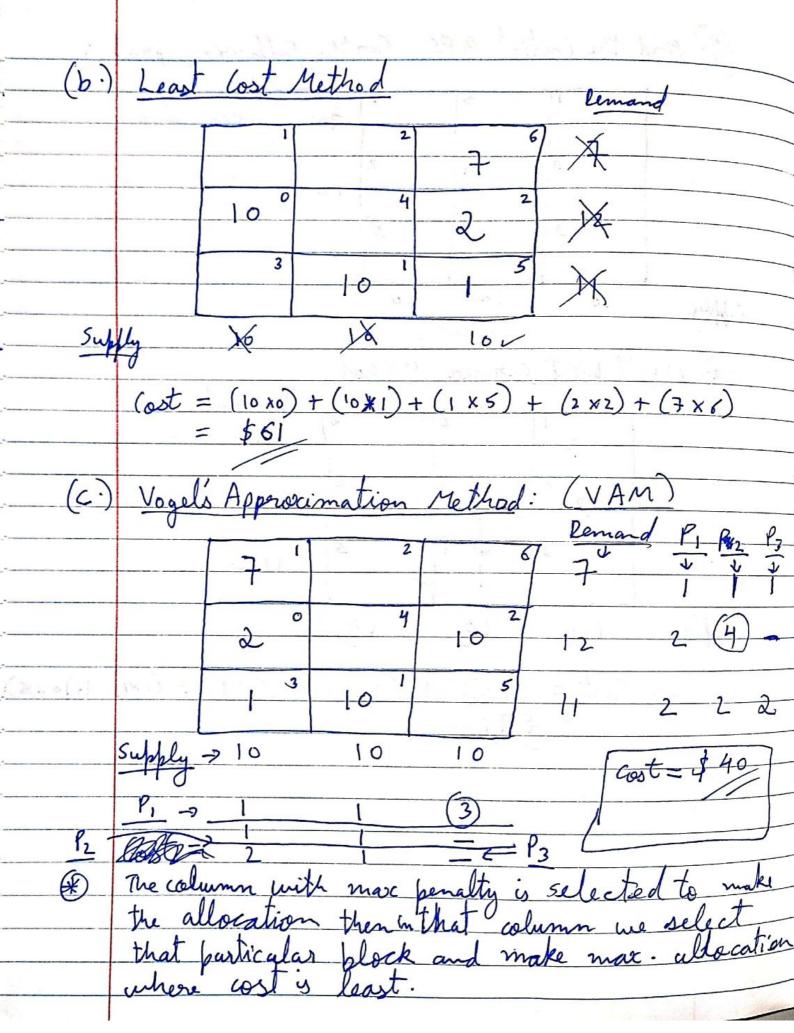
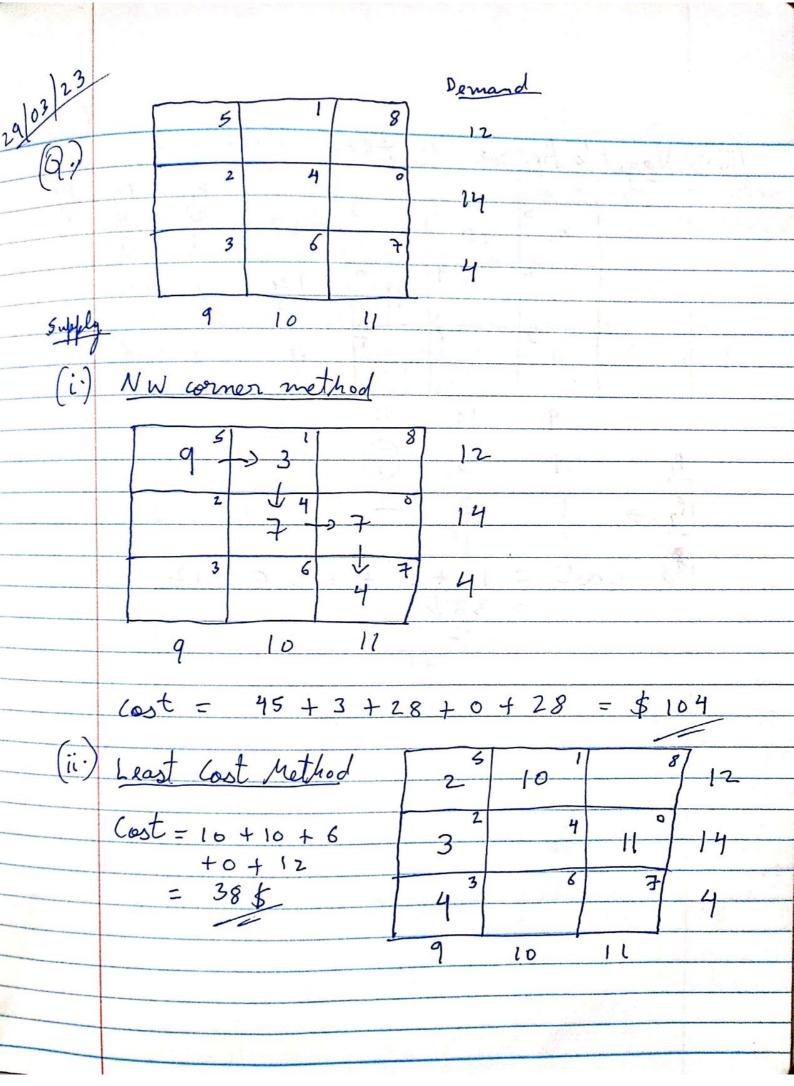
TRANSMORTATION MODELS Its a special case of L.P. It deals with shipping of commodities from m sources to n nodes.

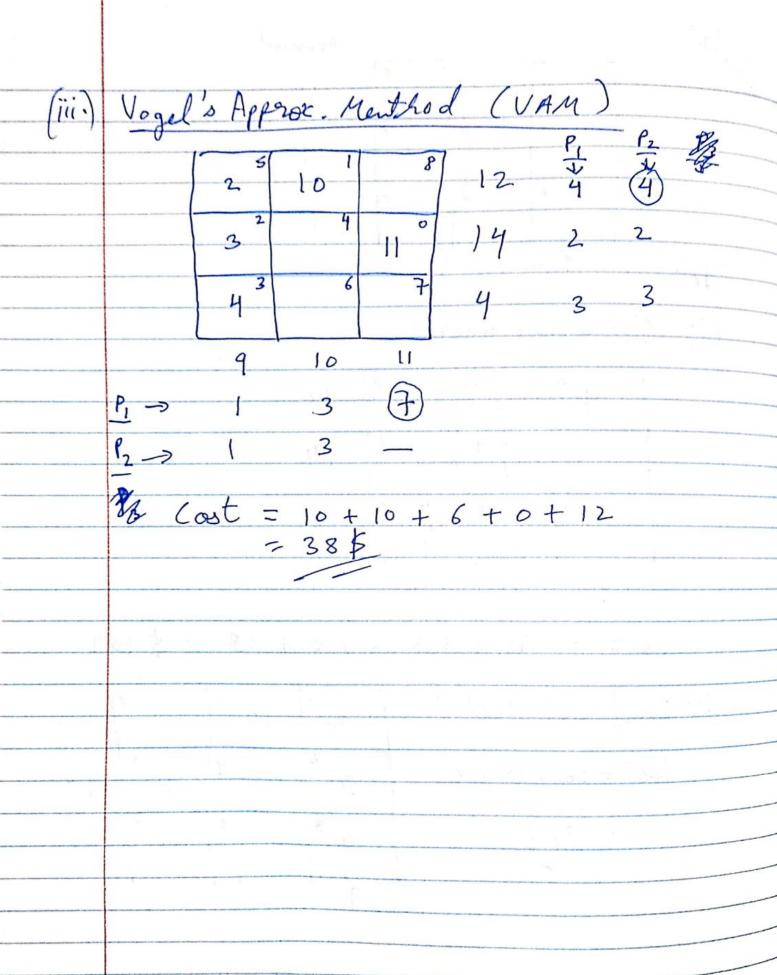
The basic var.'s will be (m+n-1) and the independent constraints will be (m+n-1). Since transportation model deals with the shipping cost of the commodities, i. it will always be a minimization prob. Transportation models are solved in 2 phases: (i) To find initial basic feasible solm (ii) To find the optimal sol". Initial basic feasible sol" is determined by 3 methods: (i) North West Corner Method (ii) Least cost Method (iii.) Vogel's Approximation Method

Any basic feasible sol" will have (m+n-1) basic varis that assume non-zero +ve values And the non-basic varis will have yero values. The cells corresponding to non-basic war. will be -> Basic Jeas. Solm DEGENERATE BES If in a cell we find zero mentioned, it means that the cell corresponds to a basic var. that has assumed O value. It implies degenerate hosic feasible soln. BALANCED TRANSPORTATION 2 supply = Edemand

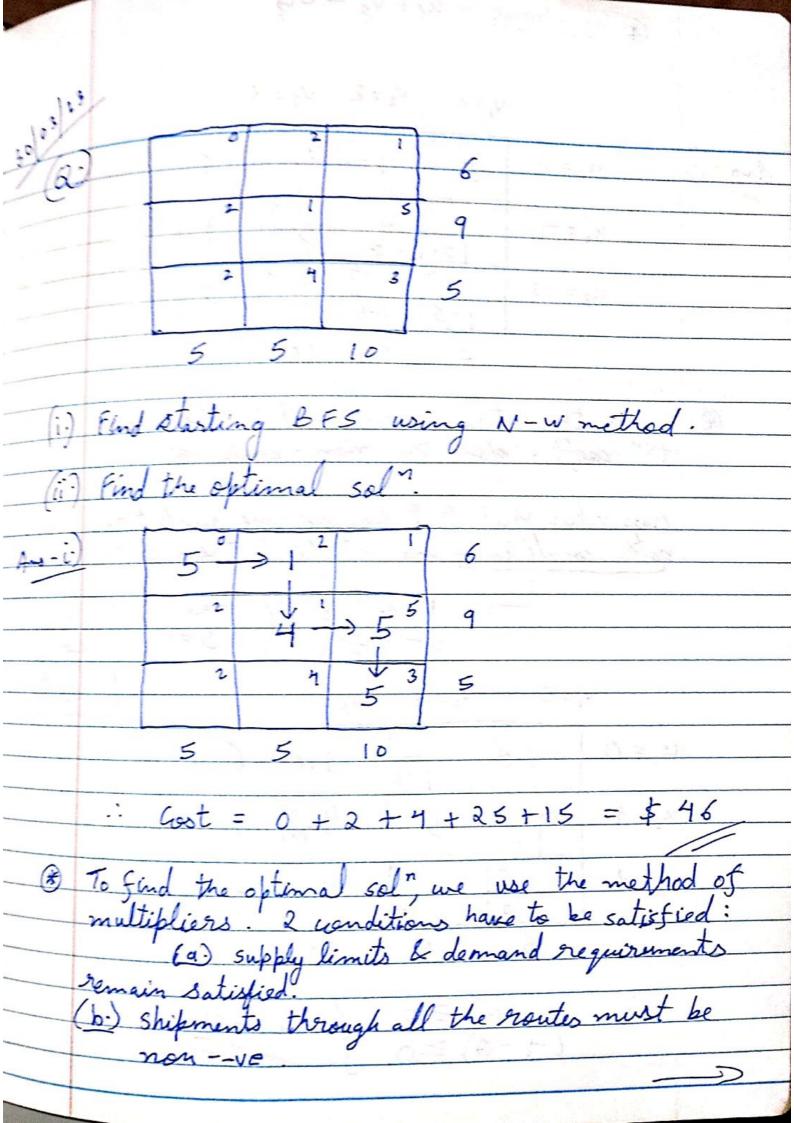


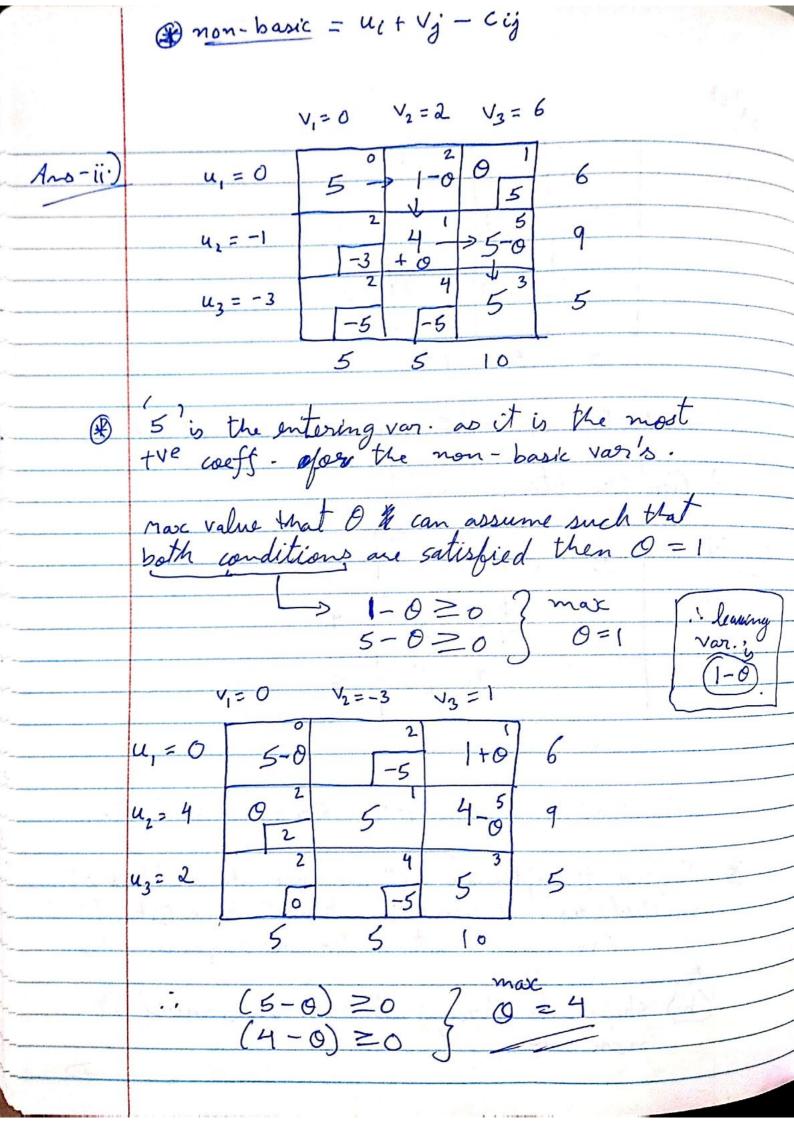






(a) A transport company ships truckloads of grain from 3 farms to 4 mills. The supply and the demand the Cin truckloads) together with the unit transportation cost per truckload on different routes are summarized in the model. The unit transportation cost Cij (shown in NE corner of each box) are in 100's of \$5. Use the 3 methods to find the starting feasible solm. mill 20 14 1.5 Cost = \$ 520 15





$$V_{1} = 0 \qquad V_{2} = -1 \qquad V_{3} = 1$$

$$U_{1} = 0 \qquad 1 \qquad 0 \qquad -3 \qquad 5$$

$$U_{2} = 2 \qquad 4 \qquad 2 \qquad 5 \qquad -2$$

$$U_{3} = 2 \qquad 0 \qquad -3 \qquad 5$$

.: Since all non-basic are - ve, i optimal

: Optimal cost = 0 + 8 + 5 + 15 + 5 = \$33

13/4/23 Esupply + Edomand 105 + 145 ... unbalanced transportat. (9) (i) VAM for BFS Ans -i) 1-3 Cost = 10 + 40 + 60 + 360 + 45 +0 = 515 \$

(ii.) Optimal 501" V1=3 V2=1 V3=3 4,=0 60 60-030 (cond "0 10 20 15 40 10 + 120 + 40 + 300 + 45 + 0 = 515\$

other +ve value in non-basic that can be taken as the intering var., this means optimality has reached and futur

UNBALANCED TRANSPORTATION with PENALTIES In an unbalanced trasp. prob., sometimes there are penalties for unsatified demand to reflect the Let the penalty cost per unit of unsatisfied demand be 6,4 and 2 for destinations D, D, D, D, Find (i) BFS using VAM.
(ii) check for optimality.

Cost = 60 + 150 + 20 + 20 + 60 + 40 = 350 \$

	VI	V2 = 5	V3 =	3		
	1	305	6	J-1 - 12	, JF .	()
4=0	60	-30	-3	No are A	La-1	1
33 3 3	3	10 2	3	111/200	. L	
$u_1 = -3$	I-5	-	-3	19	or and A	
	2	6	20			
13:-2	-3	-3	61			
	6	4	30 2			
un=-1	-6	10	20			
	- 0			-	-	

· optimal as all non-hasic var's are -ve.

.: Cost = 350/-

AT AT AT ANY GOLD

The teach of the teach of the last

Find the first with

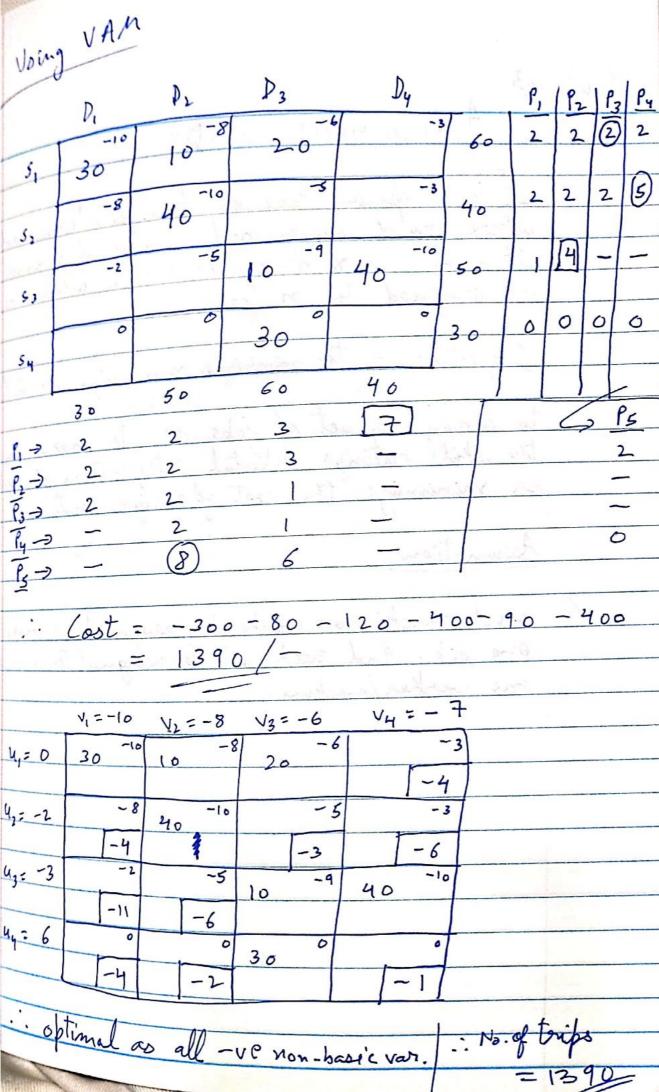
the test of the second second

a. . . m hatrones is is see

a blood at all solving

E I G MAN 12th - A

6										
124/23	MAXIMIZATION Prob in Transportation									
19/04/23	$P(AX) = (0_1, 0_2, 0_3, 0_4)$									
~ (0)	There are 4 areas which are affected dup to									
$(Q \cdot)$	There are 4 areas which are affected due to floor food grain is to be dropped in these areas by 3 aircrafts (51, 52, 53). The following matrix is given:									
	ginen:	-	D.		D					
		10	D2	03	D4	ai ai				
			r	3		60				
		8	10	5	3					
	S ₂					40				
		2	5	0	-					
	53	73-120-	13		(6	-50				
;	bil	30	50	60	40					
;										
·	where ai denotes total no. of trips that air si can make in one day. bi -> No. of trips required to the area D;									
·	bi -> no. of trips required to the area); is									
	Ci: - do to amount of fail again that aircraft Si									
	Cij - denotes amount of food grain that aircreft si can carry to the area Dj in one trip. Find # of trips that aircraft si should note to the area Dj so that the total quantity of food dropped is maximized.									
-										
^						to apartation				
- (X)	Cij is converted as a -ve value for transportation problem model to be treated as a minimization problem: Max prob > Cij > -ve									
K*										
	· Max orab ~ ~ ve									
	- Cy									



= 1390