Exercise- 7-

Find the initial feasible solution using

1-least cost method **2-vogel's approximation method**

(A)

Destination / Sources	D_1	D_2	D_3	D_4	Supply
S_1	3	6	8	5	20
S_2	6	1	2	5	28
S_3	7	8	3	9	17
Demand	15	19	13	18	

By using least cost method

Destination / Sources	D_1	D_2	D_3	D_4	Supply		
S_1	3 15	6	8	5 5	20	5	0
S_2	6	(start) 1 19	2 9	5	28	9	0
S_3	7	8	3 4	9 13	17	13	0
Demand	15	19	13	18			
	0	0	4 0	13 0			

IBFS: $X_{11}=15$, $X_{14}=5$,$X_{22}=19$,$X_{23}=9$, $X_{33}=4$, $X_{34}=13$

And TTC=(15*3)+(5*5)+(19*1)+(9*4)+(4*3)+(13*9)=236

By using VAM

Destination / Sources	D_1	D_2	D_3	D_4	Supply			Row penalty		
S_1	3 15	6	8	5 5	20	5	0	2	2	2
S_2	6	1 19	2	5 9	28	9	0	1	3	1
S_3	7	8	3 13	9 4	17	4	0	4	4*	2
Demand	15	19	13	18						
	0	0	0	13						
				4						
				0						
column penalty	3	5*	1	0						
	3	-	1	0						
	3*	-	-	0						

IBFS : X11=15, X14=5,X22=19,X24=9, X33=13, X34=4

And TTC=(15*3)+(5*5)+(19*1)+(9*4)+(4*3)+(13*9)=209

(B)

Destination / Sources	D_1	D_2	D_3	Supply
S_1	10	7	8	45
S_2	15	12	9	15
S_3	7	8	12	40
Demand	25	55	20	

By least cost method

Destination / Sources	D_1	D_2	D_3	Supply		
S_1	10	7 45	8	45	0	
S_2	15	12	9 15	15	0	
S_3	7 25	8 10	12 5	40	15	5
Demand	25	55	20			
	0	10	5			
		0				

$IBFS: X_{12} = 45, X_{23} = 15, X_{31} = 25, X_{32} = 10, X_{33} = 5$

And TTC=(45*7)+(15*9)+(25*7)+(8*10)+(5*12)=**765**

By VAM

Destination / Sources	D_1	D_2	D_3	Supply			Row penalty		
S_1	10	7 40	8 5	45	5	0	1	1	1
S_2	15	12	9 15	15			3	3	3
S_3	7 25	8 15	12	40	15	0	1	4*	-
Demand	25	55	20						
	0	40	15						
		0							
column penalty	3*	1	1						
	-	1	1						
	-	5*	1						

IBFS: X12=40, X13=5,X23=15,X31=25, X32=15

And TTC=(40*7)+(5*8)+(9*15)+(7*25)+(8*15)=**750**