ICA 18: Dedicated Storage Assignment Problem

ISE 453: Design of PLS Systems Fall 2018

1. What is the change in the minimum expected total distance traveled along an eight-foot wide down aisle for single-command S/R operations if four-high dedicated and three-deep lanes are used as compared to randomized, block stacking of 42 × 36 in. two-way pallet loads of products A, B, and C is used? The maximum inventory levels of the products are 120, 60, and 240, respectively, the levels are uncorrelated, and retrievals occur at a constant rate, the products have cube per order index (COI) of 4, 1 and 6 respectively, and the I/O port is located at the end of the aisle.

Solution:

					A	B	C	
x	3			COIi	4	1	6	
y	3.5			Mi	120	60	240	
N	3			fi	30	60	40	
H	4							
D	3							
Randomized			Dedicated					
M=	210		La=	10	Lb=	5	Lc=	20
Lrand=	19		Xa=	30	Xb=	15	Xc=	60
X=	57		db=	15	da=	60	dc=	150
TDrand=	7410							
			Tdded=	8700				
		Difference=	1290					
			Difference=	1290				