THE HONG KONG POLYTECHNIC UNIVERSITY

HONG KONG COMMUNITY COLLEGE

Subject Title : Logistics and Stores Management **Subject Code** : CCN2300

Session : Semester One, 2016/17

Numerical Answers

Question B1

(b)(i) The total demand for each period will be 800, 600, 1150, 700, 400, 450, 400 and 150 respectively.

(b)(ii) The balance amount of swimming goggle in each period are 800, 200, 50, 350, 410, 60 and 410 respectively.

(b)(iii) Two lots of swimming goggle should be arranged to be receipt in July and one lot of swimming goggle should be arranged to be receipt in September and November respectively.

Question B2

(b)(i) Total capacity = (6)(2)(80)(20)
= 19,200 unit loads

(b)(ii) Width = 3 (1.5 + 0.152) = 4.956m/aisle

Length = 80 (1 + 0.205) = 96.4m

Height = 20 (1 + 0.25) = 25m

(b)(iii) Single command cycle time = Max{96.4/60, 25/25} + 2(30/60)
= 2.607 min/cycle

Dual command cycle time = Max{(1.5)(96.4/60), (1.5)(25/25)} + 4(30/60)
= 4.41 min/cycle

(b)(iv) Utilization U = 0.95 → 60U = 57 min = $2.607R_{cs} + 4.41R_{cd}$,
where $R_{cs} = R_{cd} = 8.12$ command cycles/hr

Throughput = $R_t = R_{cs} + 2R_{cd} = 3 \times 8.12$
= 24.36 transactions/hr

Question B3

(b)(i) TC(Q) = PR + CR/Q + PFQ/2

Where, Q = The number of units ordered
P = Purchase cost per unit
R = Forecasted demand
C = Cost per order
F = Holding cost factor

$dTC(Q)/dQ = d(PR + CR/Q + PFQ/2)/dQ = 0$

$\Rightarrow \quad Q = \sqrt{(2CR/PF)}$

(b)(ii) P = \$5/bottle
R = 52,000 bottles/yr
C = \$12/order
F = 25% of the value of mineral water per year

$Q = \sqrt{2(12)(52{,}000)/(5)(0.25)} \cong 1{,}000$ bottles