Chapter 14-wagner fabricating company-quantitative methods for business

Case Problem 1: Wagner Fabricating Company 1. Holding Cost Cost of capital14. 0% Taxes/Insurance (24, 000/600, 000) 4. 0% Shrinkage (9, 000/600, 000) 1. 5% Warehouse overhead (15, 000/600, 000) 2. 5% Annual rate22. 0% 2. Ordering Cost 2 hours at $28. 00$56. 00 Other expenses (2, 375/125) 19. 00 Cost per order$75. 00 3. Set-up Cost 8 Hours at $50. 00 $400 per set-up 4. & 5. a. Order from Supplier - EOQ model Ch = IC = 0. 22 ($18. 00) = $3. 96 [pic]units Number of orders = D/Q = 9. 19/year Cycle time = 250(Q) / D = 250(348. 16) / 3200 = 27. 2 days Reorder Point:

P(Stockout) = 1 / 9. 19 = 0. 1088 r = 64 + 1. 24(10) = 76. 4 Safety stock = 76. 4 - 64 = 12. 4 Maximum inventory = Q + 12. 4 = 360. 56 Average inventory = Q/2 + 12. 4 = 186. 48 Annual holding cost = 186. 48(3. 96) = $738. 46 Annual ordering cost = 9. 19(75) = $689. 35 Purchase cost = 3200($18) = $57, 600 Total annual cost = $59, 027. 81 b. Manufacture - Production lot size model Ch = IC = 0. 22($17. 00) = $3. 74 P = 1000(12) = 12, 000/year Note: The five-month capacity of 5, 000 units is sufficient to handle annual demand of 3, 200 units. [pic] Number of production runs = D/Q = 3. 1/year Cycle Time = 250(Q) / D = 250(966. 13) / 3200 = 75. 48 days Reorder point: P(Stockout) = 1 / 3. 31 = 0. 3021 r = 128 + 0. 52(20) = 138. 4 Safety stock = 138. 4 - 128 = 10. 4 Maximum inventory = (1 - 3200/12000)966. 13 + 10. 4 = 718. 89 Annual holding cost = (354. 25 + 10. 4)(3. 74) = $1363. 79 Annual set up cost = 3. 31(400) = $1363. 79 Manufacturing cost = 3200($17) = $54, 400 Total Annual Cost = $57, 088. 67 6. Recommend manufacturing the part Savings: $59, 027. 81 - 57, 088. 67 = $1, 939. 14 (3. 3%) ---------- [pic] [pic]