EXTRA PROBLEM 5: DOMINANCE AND RISK PROFILES

(2) A. Can we make a decision in the decision problem depicted in Figure 1 using **ONLY** deterministic dominance considerations? Explain why or why not?

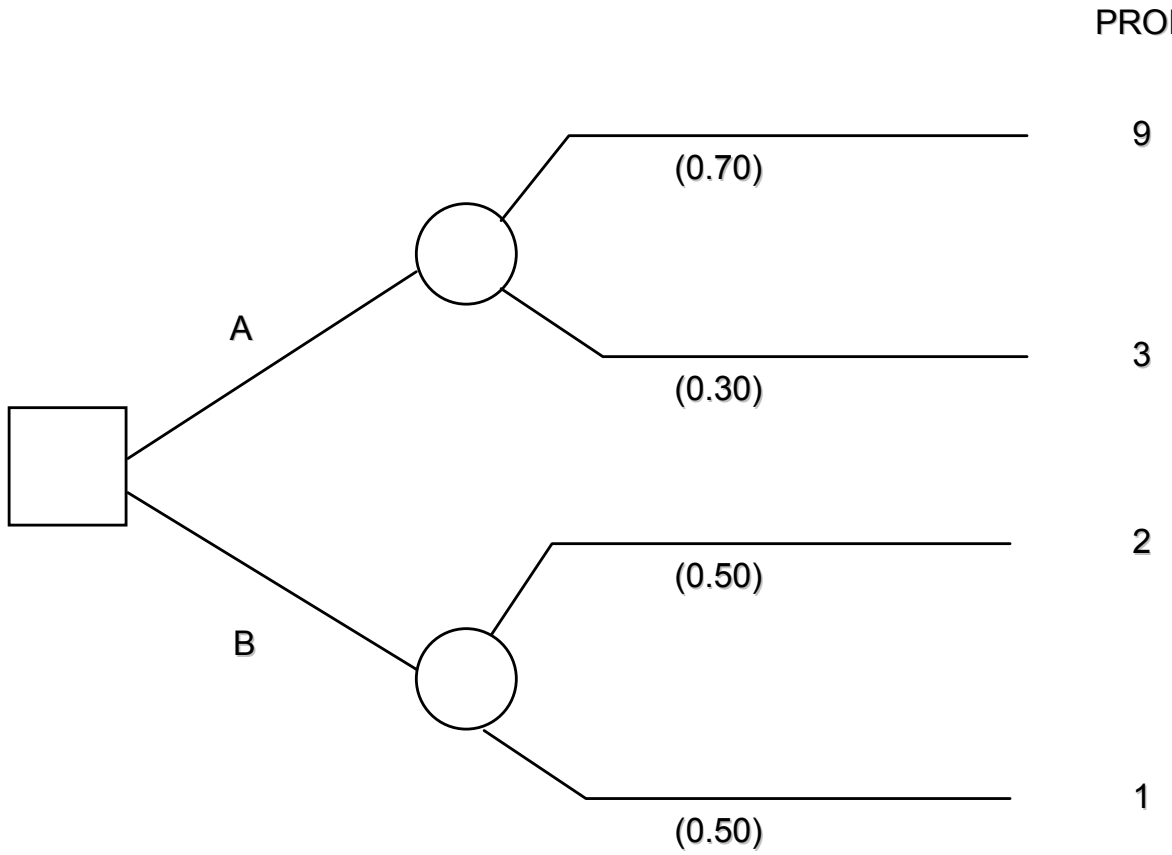


FIGURE 1

YES, THE WORST OUTCOME OF OPTION A EQUALS 3, THE BEST OUTCOME OF OPTION B, EQUALS 2, WHICH IS WORSE THAN THE PREVIOUS BEST OF OPTION A. HENCE, OPTION A DETERMINISTICALL DOMINATES OPTION B AND IS PREFERRED.

(5) B. How many cumulative risk profiles can be drawn for the tree in Figure 2 and give an explanation (DO NOT DRAW THE CUMULATIVE RISK PROFILES).

ALTERNATIVE SYSTEM A : 1 STRATEGY (DARK BLUE COLOR)
ALTERNATIVE SYSTEM B: 2 STRATEGIES (RED AND GREEN COLOR)
ALTERNATIVE SYSTEM C: 2 STRATEGIES
(MAGENTA AND CYAN COLOR)
TOTAL : 5 SRATEGIES

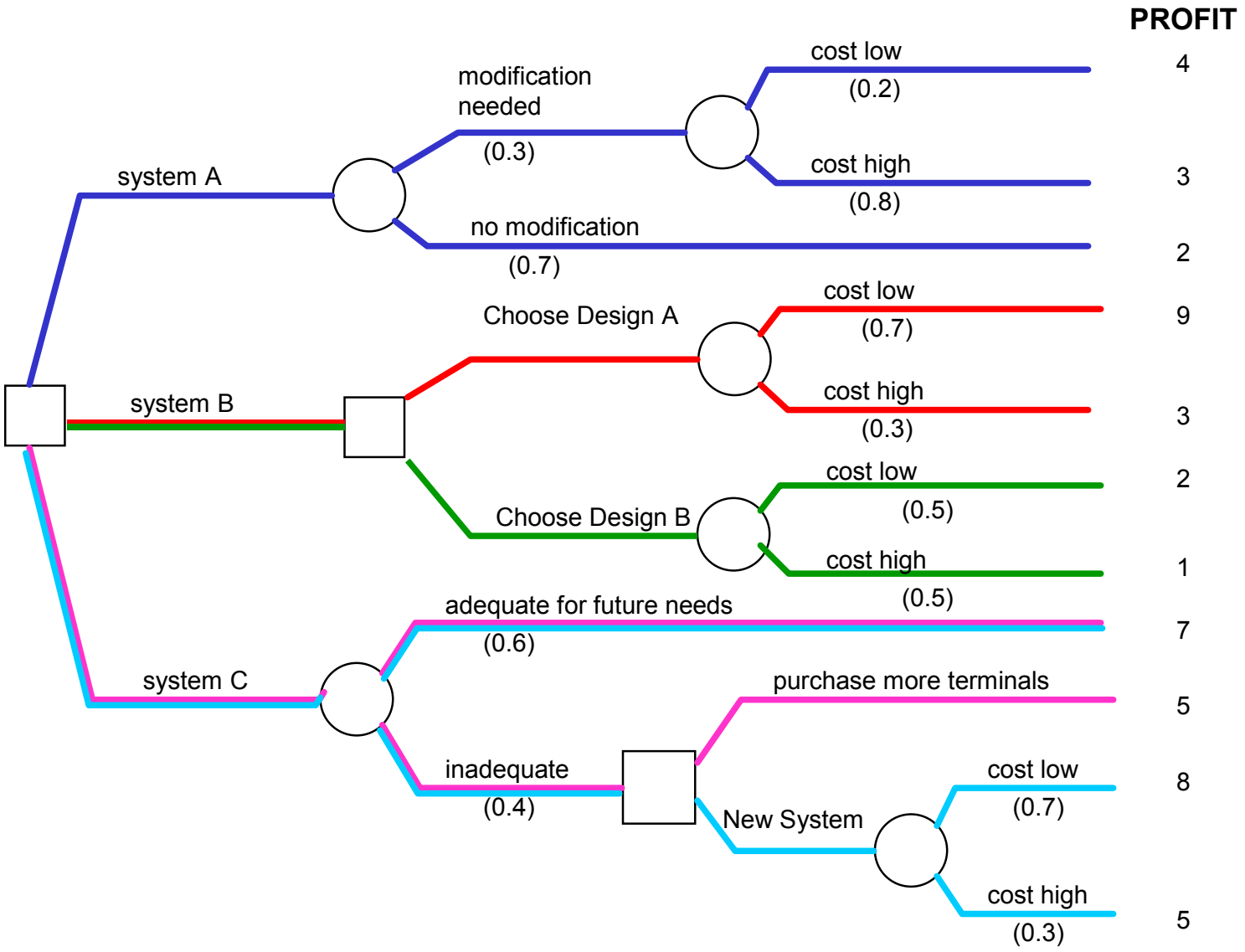
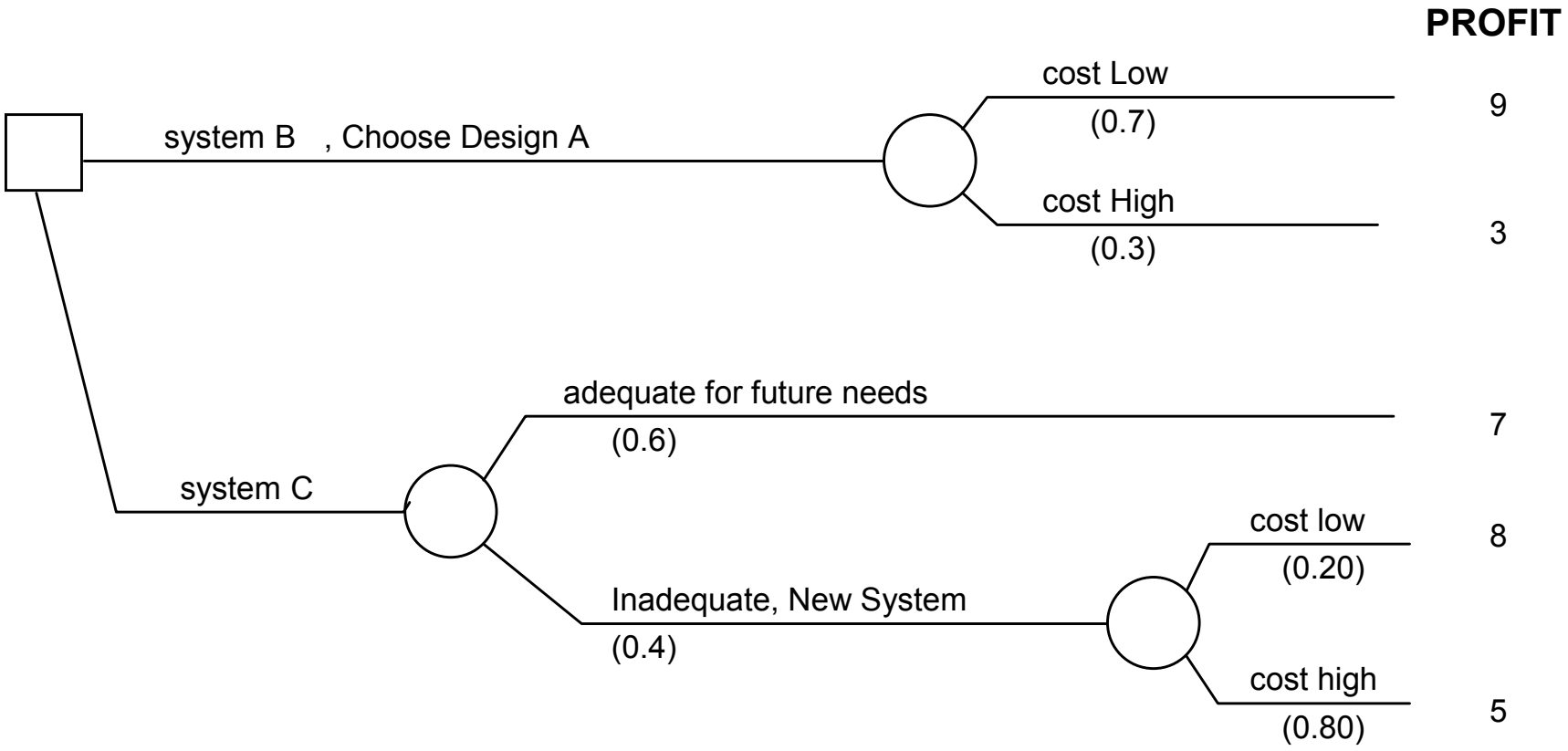

PROFIT
system A
modification needed
(0.3)
cost low
(0.2)
4
cost high
(0.8)
3
no modification
(0.7)
2
system B
Choose Design A
cost low
(0.7)
9
cost high
(0.3)
3
Choose Design B
cost low
(0.5)
2
cost high
(0.5)
1
system C
adequate for future needs
(0.6)
7
purchase more terminals
5
inadequate
(0.4)
New System
cost low
(0.7)
8
cost high
(0.3)
5

Figure 2

(6) C. Using **ONLY** deterministic dominance considerations, simplify the tree in Figure 2 and draw the simplified tree. How many cumulative risk profiles can you draw for the simplified tree? (DO NOT DRAW THE CUMULATIVE RISK PROFILES).



2 CUMULATIVE RISK PROFILES

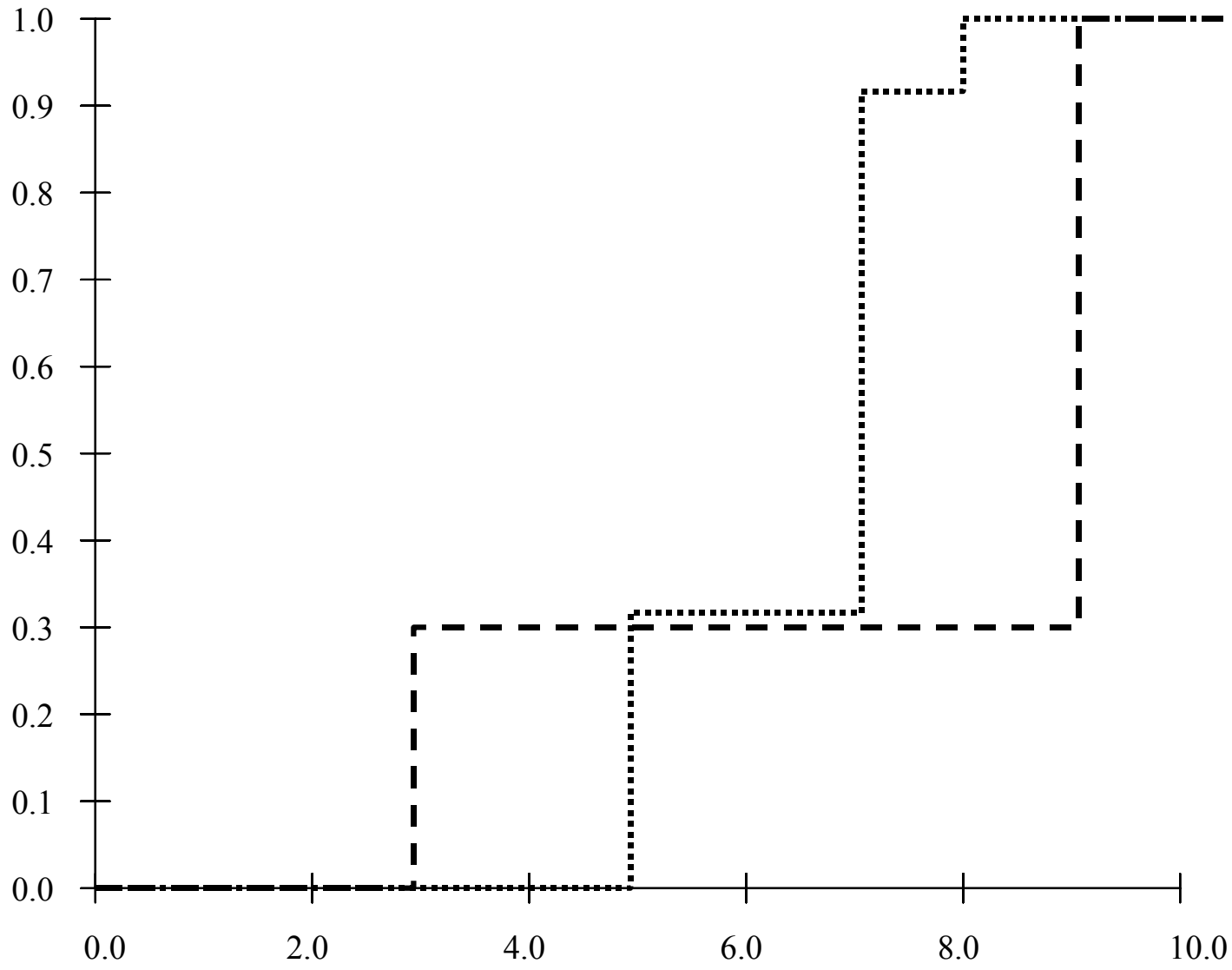
(4) D. Draw the cumulative risk profiles for the simplified tree under C. **Clearly show your calculations.**

STRATEGY: System B, Choose Design A:

$\Pr(\text{Profit}=3) = 0.3 \Rightarrow \Pr(\text{Profit} \leq 3) = 0.3$
$\Pr(\text{Profit}=9) = 0.7 \Rightarrow \Pr(\text{Profit} \leq 9) = 1.00$

STRATEGY: System C, New System:

$\Pr(\text{Profit}=5)=0.40*0.80=0.32 \Rightarrow \Pr(\text{Profit} \leq 5) = 0.32$
$\Pr(\text{Profit}=7)=0.60 \Rightarrow \Pr(\text{Profit} \leq 7) = 0.92$
$\Pr(\text{Profit}=8)=0.40*0.20=0.08 \Rightarrow \Pr(\text{Profit} \leq 8) = 1.00$


1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.0
2.0
4.0
6.0
8.0
10.0

(3) E. Compare the cumulative risk profiles under D and draw dominance conclusions.

CUMULATIVE RISK PROFILES CROSS. THEREFORE THERE IS NO DOMINANCE BETWEEN THE TWO STRATEGIES.