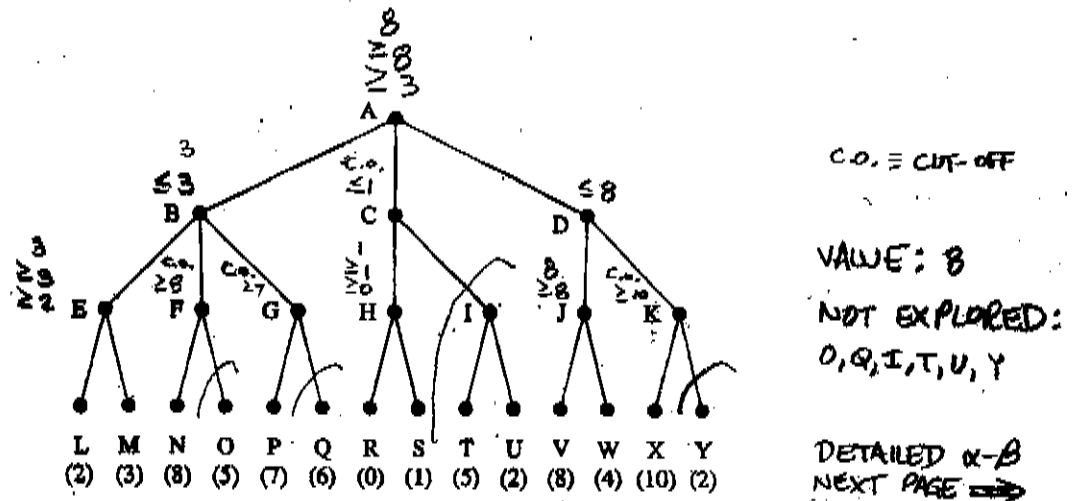
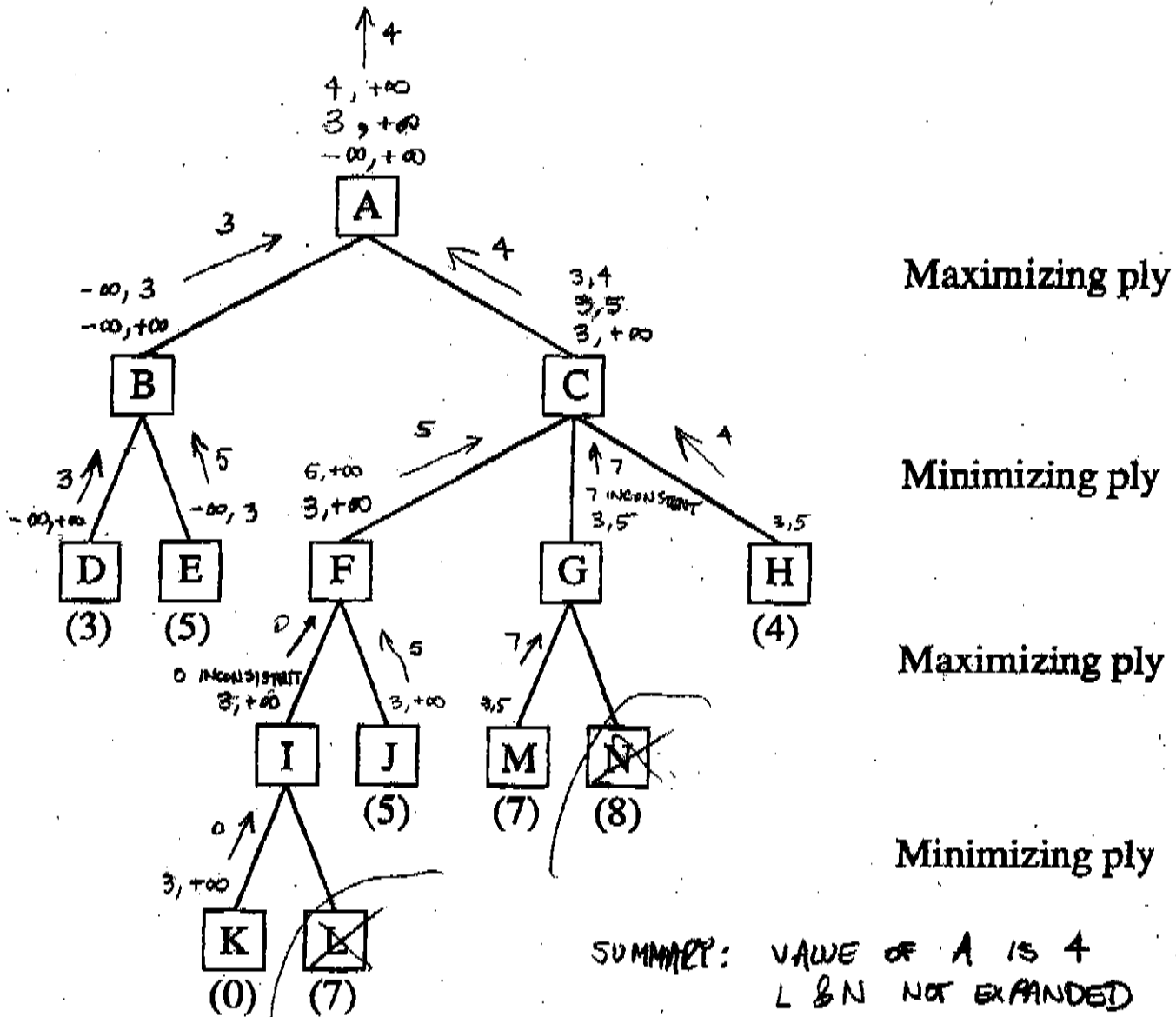


# Alpha and Beta Cutoffs [RICH6KNIGHT]



[NILSON]. 2. What nodes would not need to be examined using the alpha-beta algorithm—assuming that nodes are examined in left-to-right order?

APPLYING Alpha-Beta Search (Fig. 6.17, p. 170 of R&N) to the diagram at the bottom of page 2, eHandout for EECS 391/491, 02/19/2007, corrected 03/09/2008. -- M.S. Branicky

```

Max_Value( A, -inf, +inf )
  Min_Value ( B, -inf, +inf )
    Max_Value( E, -inf, +inf )
      Min_Value ( L, -inf, +inf )
        return 2
      v=2
      alpha=2
      Min_Value ( L, 2, +inf)
        return 3
      v=3
      alpha=3
      return 3
    v=3
    beta=3
    Max_Value( F, -inf, 3 )
      Min_Value ( N, -inf, 3 )
        return 8
      v=8
      8 >= 3: return 8 // CUTOFF: O is not searched
    Max_Value ( G, -inf, 3)
      Min_Value ( P, -inf, 3 )
        return 7
      7 >= 3: return 7 // CUTOFF: Q is not searched
    beta = 3
    return 3
  v=3
  alpha=3
  Min_Value ( C, 3, +inf )
    Max_Value( H, 3, +inf )
      Min_Value( R, 3, +inf )
        return 0
      v=0
      Min_Value( S, 3, +inf )
        return 1
      v=1
      return 1
    v=1
    1 <= 3: return 1 // CUTOFF: I, T, U are not searched
  Min_Value ( D, 3, +inf)
    Max_Value ( J, 3, +inf)
      Min_Value ( V, 3, +inf)
        return 8
      v=8
      alpha=8
      Min_Value ( W, 8, +inf)
        return 4
      return 8
    v=8
    beta=8
    Max_Value ( K, 3, 8)
      Min_Value ( X, 3, 8)
        return 10
      v=10
      10 >= 8: return 10 // CUTOFF: Y is not searched
    return 8
  v=8
  alpha=8
  return 8

```

IN SUMMARY: value is 8; PRUNED NODES: O, Q, I, T, U, Y