```
Colourings[MD[], m Integer] :=
  Length /@ (Sort[Length /@
          (List@@ PermutationCycles@#) [1]] &
       // GroupBy [Permutations@Range@m, #] &
     // Values);
Colourings[k MD, m Integer] :=
  Colourings[k, m] =
   Block [{e = EdgeSequence@k, s,
     v, w = List@@@List@@ToPD@k},
    s = SortBy [If [Order [Position [Join @@ e, #[1]]],
             Position[Join@@e, #[3]]] == 1,
          #, Reverse@#] & /@
        (w //. (Max@# \rightarrow Min@# &/@
              w[;;, {3,5}]))[;;,2;;4],
      Max@Table[Position[Join@@e, #[j]]],
          {j, 2}] &];
    (*In s, the third values are to be
     derived from the first two.*)
    Total /@ Table [If [ValidColouring[
         w, e[1], s, g], 1, 0],
       p, (Length/@(List@@
                  PermutationCycles@#) [1]
              // Sort) &
          // GroupBy[Permutations@Range@m, #] &
         // Values},
       {g, Tuples[p, Length@e[1]]}];
```