1. The split is OK if the pivot is an element of rank n/4 to 3n/4. That is, half of the element in the array are pivots that yield an OK split.
2. The split is not OK if and only if  
   (i) The median of three randomly chosen elements has rank > n/4 or  
   (ii) it has rank > 3n / 4.  
   Case( i ) happens iff( a ) exactly 2 out of 3 random elements have rank < n / 4 or ( b ) all 3 randomly chosen elements havae rank n < 4. Each random element will have rank < n / 4 with probability 1 / 4. The probability that two fixed elements will have this rank and remaining element will have rank >= n / 4 is (1/4)^2\*(3/4) = 3/64. There are 3 ways to choose 2 elements out of 3. So, case(a) happens with probability 9/64. (b) (1/4)^3 = 1/64. Case(i) happens with probability 9/64 + 1/64 = 5/32.  
   5/32 \* 2(case(ii) is the same) = 5/16. Therefore, the probability of an OK split is 1 – 5/16 = 11/16.
3. E[I] = Pr( I = 1 ) \* 1 + Pr( I = 0 ) \* 0 = Pr( I = 1 ) = 11/16.