23

The simplest brute force solution is for each query to iterate all the numbers from 1 to X and to check if they are ok.
One simple optimization is to observe we can sort the querys and check each number from 1 to 10^7 only once.
We currently don’t have a 100p solution as it is too slow. One way to speed it up is to compute Sum2[x] and Sum3[x] = sum of the digits of x in base 2 and base 3.
Sum2[x] = (x & 1) + Sum2[x / 2] and Sum3[x] = (x % 3) + Sum3[x / 3].

This solution still uses too much memory, so for optimizing the memory usage we can compute the arrays sum2 and sum3 only till Sqrt(10^7), as the sum of the digits of x in base 3 is Sum3[x % 3^7] + Sum3[x / 3^7] (same for base 2).

One observation is that we don’t actually need to compute anything for base2 as we have __builtin_popcount().