Solution and analysis:

We should first notice that there exists an upper bound of any solution cost as it is computed as xor of constrained numbers. Lets declare this minimum upper bound as A, (A = 2^17). We as well aim to compute a vector with A elements, which stores number of ways to achieve each cost modulo 10^9 + 7. The goal of this task is to compute minimum total cost of repairs can be viewed as finding wormholes which we wont fix such that xor of all costs xor that subset is maximal. SO what we are actually calculating is array of ways to find costs of edges we arent including. Given that the graph has maximum of k=42 cycles and that one node belongs to at most one cycle, we can find all cycles simply by using DFS for example. For each cycle we know we can exclude one edge in order for graph to stay connected, so we can iterate over edges and count the appearances of every weight. Now we need to compute xor prodact of polynomials for every cycle. We can do that quickly using FWHT. We can calculate WHT in nlogn time, where n is lenght of polynomial, multiply values in O(n) and then calculate inverse in O(nlogn). Inverse is calculated the same, but devided by length. Division over module is calcualted using exponentials (small ferma theorem) and fast exponential.