1. Reduce to hamiltonian path counting. There's an edge between v_i and v_j, iff $i + j$ is a perfect square. $O(2^n \cdot n^2)$.
2. dfs. If we generate A at random, then for each edge it only has $O(\frac{1}{\sqrt{U}})$ probability of being a perfect square. There are only U^n choices for the input, so under certain assumptions, even in the worst case the average degree of the graph is $O(1)$, and the running time is still $O(c^n)$ (instead of $O(n!)$).

References