For each of the following, write in the simplest currently known form what it equals. (In class we covered the notation, \([k]\), \([1]-\), and \([1]+\). But the latter two we covered only for the case of when the “base” class—the one that is doing the calling of the oracle—is NP. On this quiz, we’ll also touch on the case when the base class is P. What the \([1]-\) notation means there is that on each input the poly-time machine asks exactly one query to its oracle and if the answer is Yes it immediately halts and rejects and if the answer is No it immediately halts and accepts. What the \([1]+\) notation means there is that on each input the poly-time machine asks exactly one query to its oracle and if the answer is Yes it immediately halts and accepts and if the answer is No it immediately halts and rejects.

Example Question: \(P^{P[1]-}\)

Answer: P.

Question 1 [100 points] (25 points each).

1. \(P^{NP[1]-}\)
2. \(P^{NP[1]+}\)
3. \(NP^{NP[1]-}\)
4. \(NP^{NP[1]+}\)