CSE 207: Assignment 1

ID: 1705045

Name: Iftekhar Hakim Kaowsar

Question. Is it possible that P ≠ NP, yet NP = co-NP?

I think it is possible. P ≠ NP yields NP ⊄ P. Given that NP ⊄ P, it can be very much true that decision problems with polynomial time certifier for "Yes" solution – has polynomial time certifier for "No" solution too – and vice-versa.

Although whether NP = co-NP is an open problem till now, I think being P ≠ NP does not close the chance of being NP = co-NP in any aspect. It means the given constraint (P ≠ NP) does not prove the impossibility.

That's why, the answer is – possible.

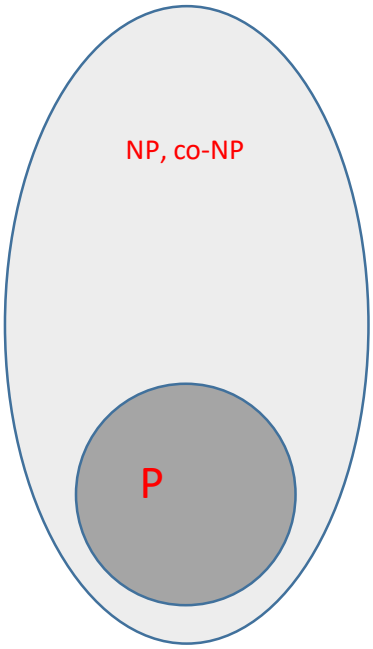

Figure: Possible diagram