Prüfungsprotokoll Mathematik

Fach: ADM II
Studiengang: Computer Science Master

☐ Bachelor
☐ Master

Prüfer/in: Prof. Klimm
Datum: 13.08.21
Prüfungsdauer: 50 Minutes (special note: certain disabilities allow you to apply for longer exam times. I have one of those but decided against it because I figured more time would just make it worse. Im glad I did that but to each their own. I just wanted to mention it because just because thats an accomodation thats offered doesnt mean its actually helpful.)

Beisitzer/in:
Note: 3,3
Anzahl der Kandidaten: 1

Vorbereitungszeit: did not keep track
Literatur: lecture, combinatorial optimization by cook and cunningham, combinatorial optimization theory and algorithms by korte and vygen

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Beurteilung der Prüfung und des/r Prüfers/in: i think they were nice probably. i was extremely nervous and generally find that kind of thing hard to judge. gave some few hints when i was struggling.

Fragen: I chose Complexity Theory as my starting topic. Gave definitions of p, np, drew the diagram. They asked for examples for each as well as for np hardness and co np. What complexity class is a problem with the yes instances just being the empty set? Afterwards they said I got all of this right and it was good.

Then they asked for approximation algorithms of specific types of TSP. I named types of TSP and said what we have approximations for but got super muddled about whats what in the algorithms so they decided to move on. Afterwards they said I did badly here.

They asked for the algorithm for maximum matchings. I gave it. They asked some follow up questions like can there be more than one tree, can there be two outer nodes in different trees that are connected etc. I mentioned the Tutte set in my explanation of the algorithm so they asked about the Tutte condition, I gave that. Afterwards they said I did ok in this. honestly not sure why it was just 'ok' and not good because I don't think I got anything wrong but there it is.

They asked about weighted matchings, I explained about the vertex weights and said its basically the same algorithm but we only look at edges that have equality with the edge weights. they asked why is that minimal then, I said the vertex weights serve as a certificate, they wanted to know why, I got the intuition to that right but I couldn't explain it formally. They wanted to know about complimentary slackness and what a dual looks like. I got a little confused here and it took some attempts but I kept talking during it like 'oh hold on this looks wrong I think its this way around' etc. Afterwards they said something like this part was not super good but not terrible.

They wanted to know about GC cuts. I explained integer solutions and cuts in general but I did not know the GC cuts. They said afterwards I completely blanked on this.