Exam — 16 March 2017

Ground rules

- This is an open book exam. You may consult any written sources, conventional or digital. You may not consult any person (except me).
- You may write the exam wherever it is comfortable for you. You may submit your papers in English or Hebrew, as long as it is readable.
- This is also a rather open-ended exam. You should make clear which of your results are complete and which could be extended.
- I try to minimize time pressure, but there may be more in this exam than can be finished in one day. If you run out of time, list what you would have done if time permitted. Nobody should stay awake all night, trying to finish.
- Put finished papers in my mail slot (#33, outside room 231).
- Good luck!
- I will try to be available from about 9 a.m. till about 6 p.m. Try my room (#272) or call me at home (x 6497).

Question 1 10 points

[Reminder: $\mathcal{S}_n$ is the symmetric group on n elements (i.e. the group of all permutations of n objects). The subset $\mathcal{A}_n$, of even permutations of $\mathcal{S}_n$, is a subgroup of $\mathcal{S}_n$. (Why?)]

Construct the character table of $\mathcal{A}_3$.

Question 2 40 points

 is the Dynkin diagram of a classical Lie algebra. (Which?)
Denote Dynkin indices by(τ, ω).

Resolve the product of irreps (1,1)$\otimes$(0,2) into a direct sum of irreps.