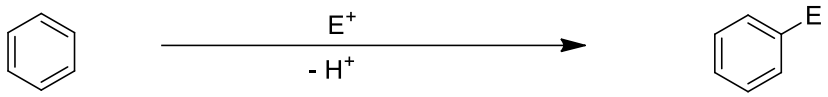
FRO-II, Exercise 2 2021

1 a) Which is the rate-limiting step in an electrophilic aromatic substitution reaction?

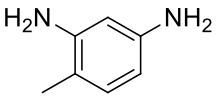
b) Draw the corresponding mesomeric structures of the sigma-complex of benzene.

c) Substituted aromatics can react faster or slower than benzene (R = H). How is R = MeO and R = NO_2 generally influencing the reactivity?



2 A mixture of styrene (vinylbenzene) and 1,3,5-trimethoxybenzene is treated with a strong non-nucleophilic acid (H^+, or for a real example tetrafluoroboric acid). Please draw the reactants, intermediates and the product(s) that you would expect.

3 Propose a synthetic route to prepare compound **A selectively**. Only toluene is the only allowed aromatic starting material (more than one step is required).



A