1. a) The biosynthesis of fatty acids is outlined below.

The method by which monounsaturation is achieved depends on whether the process takes place in an aerobic or an anaerobic organism:

b) i) The haem-oxo unit in P450 enzymes mediates hydroxylation via a radical mechanism:
ii) NADP$^+$ acts as a dehydrogenation reagent in the manner shown below:

iii) Oxidative deamination is the reverse process of reductive amination. So the forwards process is followed by starting on the RHS of the below scheme from the $\alpha$-amino acid in the green box.