Abstract: In this study, using the PM3 Hamiltonian of the quantum mechanical computer code called MOPAC, a procedure we devised for the computation of the Arrhenius parameters of the pyrolysis of some alkyl acetates is reported. The acetates studied are ethyl, n- and I-propyl, I-butyl, t-butyl and s-butyl. The results obtained compare well within an order of magnitude with the experimental values in the literature. It is indeed gratifying that for s-butyl acetate where more than one olefinic product is possible, our procedure reasonably predicts the experimental product ratio in the literature and gives by implication correct Arrhenius parameters for the decomposition of s-butyl acetate in to these separate products.