

**FRO-II 2021, Problems of the Week, Nº 5**

1. A unknown reaction of a benzylic chloride proceeds by the  $S_N1$ -type mechanism.

a) What sign do you expect for the reaction parameter  $\rho$  in the Hammett equation?

b) Order the following substrates by their expected reaction rates for this reaction (1=most rapid.... 5=slowest):

**A** (*p*-nitrobenzyl chloride)

**B** (*p*-methylbenzyl chloride)

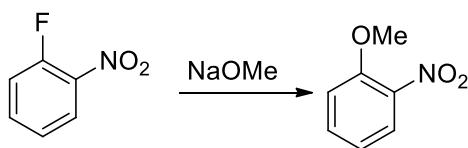
**C** (benzyl chloride)

**D** (*p*-fluorobenzyl chloride)

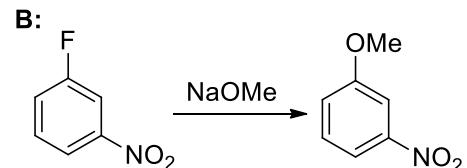
**E** (*p*-methoxybenzyl chloride).

2. a) Does reaction **A** or reaction **B** proceed more likely? Justify your answer by drawing the relevant reaction intermediate.

**A:**



**B:**



b) What is this reaction type and how is the intermediate called?