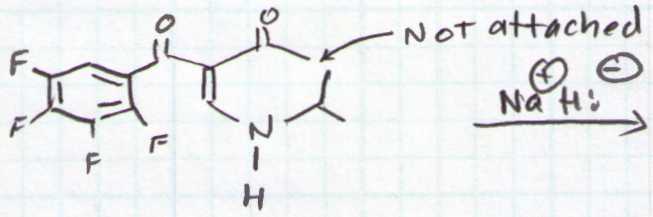
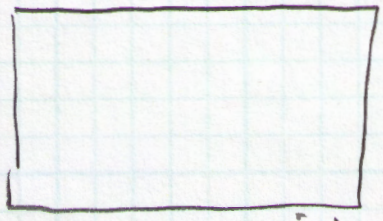
① Recall the Hofmann Rearrangement (Look it up, if you can't rem).

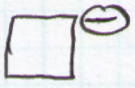
EWGs (electron withdrawing groups) on an aryl ring can speed up a NAS (or S_NAr) rxn. Use what you know about the Hofmann Rearr and NAS to show the curved mechanism arrows and intermediate / product details below

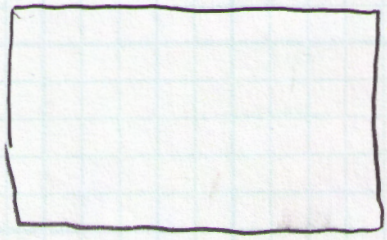


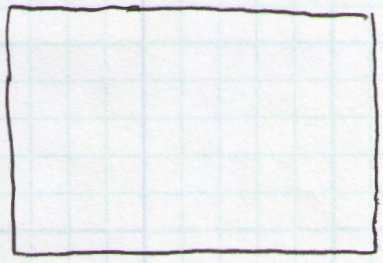


an anion existing as a $Na^{\oplus}$ salt.

step 1 for NAS

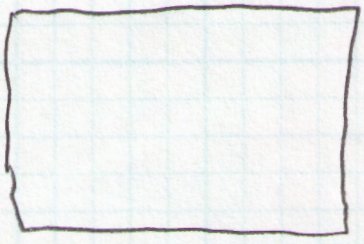






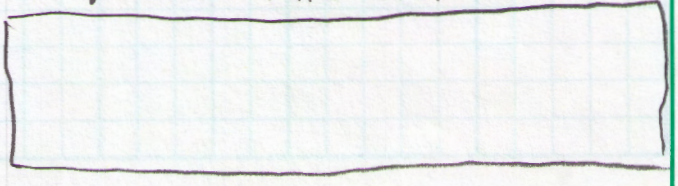
$C_{11}H_6F_3NO_2$

Step 2 to complete NAS

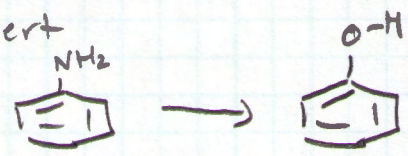


draw 1 Res Str

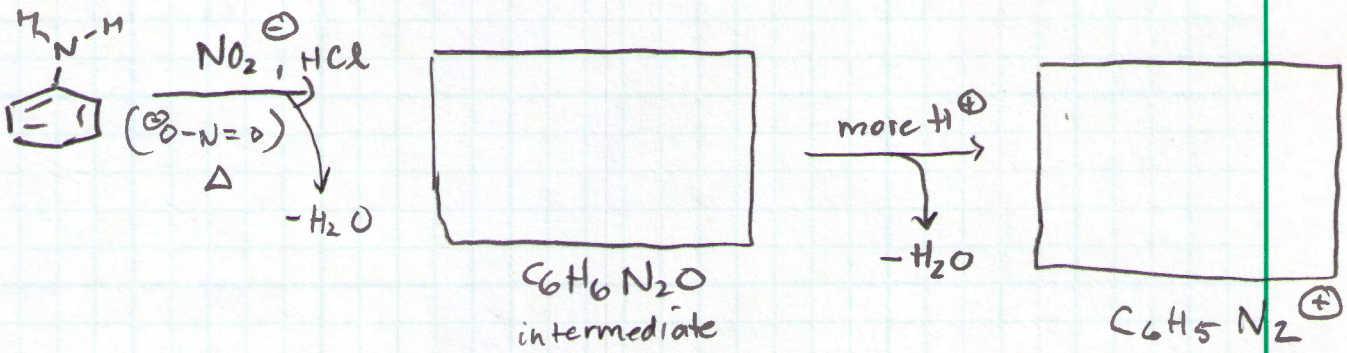
Explain how EWGs stabilize this NAS intermediate, and thus promote this rxn.

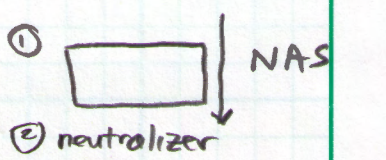


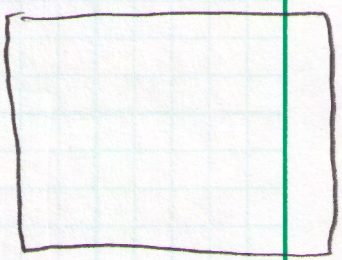
① Convert



Hint! Need to make 'NH_2' a good l.g.

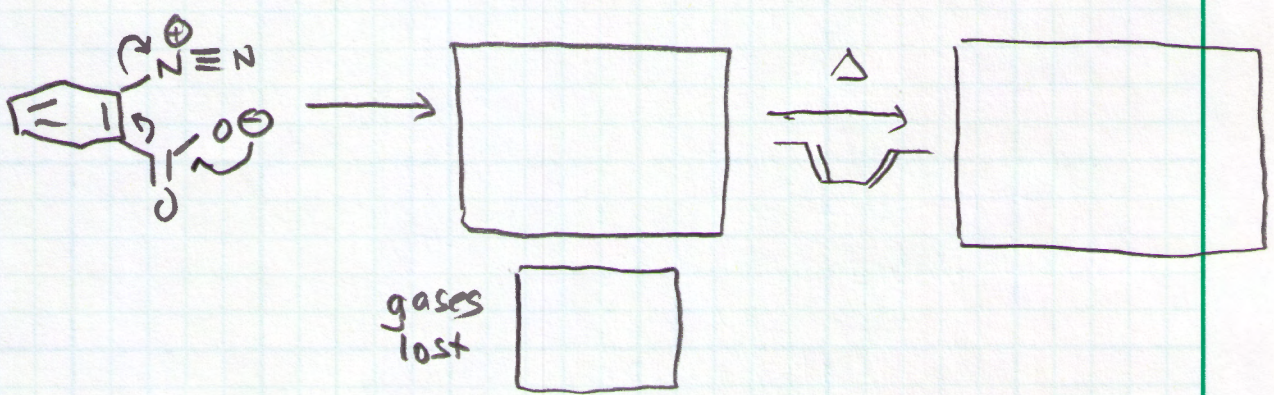




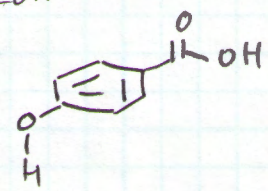


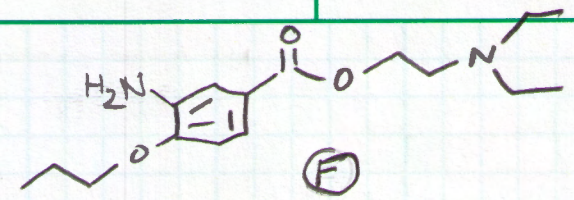
neutral NAS product

③ Follow the arrows

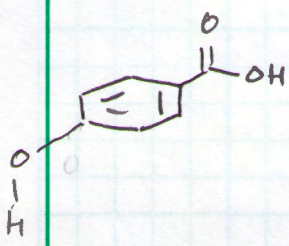


Convert

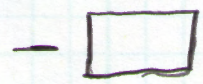




(F) proparacaine
(anesthetic in eye drops)



(A) HNO_3, 1 equiv.



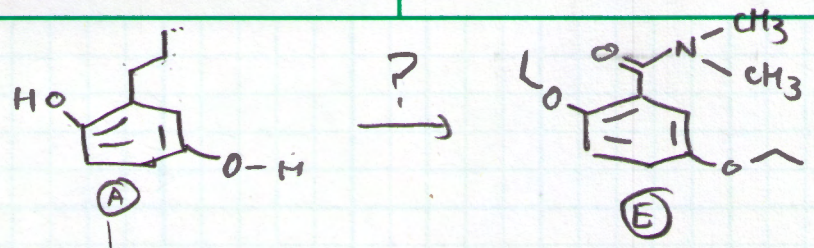
(B) $H_2C=\overset{\oplus}{N}=\overset{\ominus}{N}$ diazo methane

(C) ① NaH ② an alkyl Br

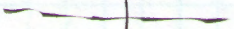
(D) ① $NaOH, H_2O$, △ ② $SOCl_2$

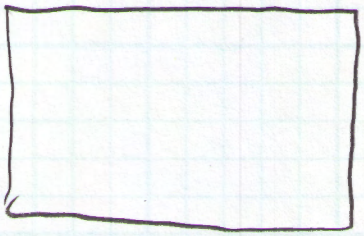
(E) ① neutralizer (base) ②

(F) proparacaine



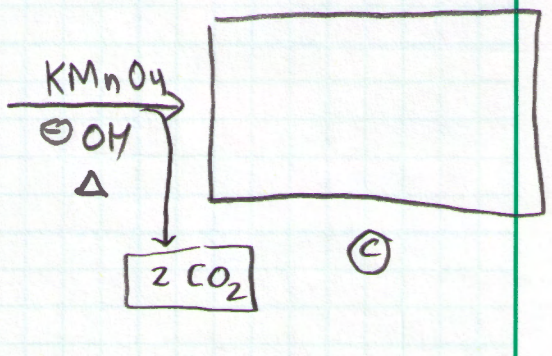
A E



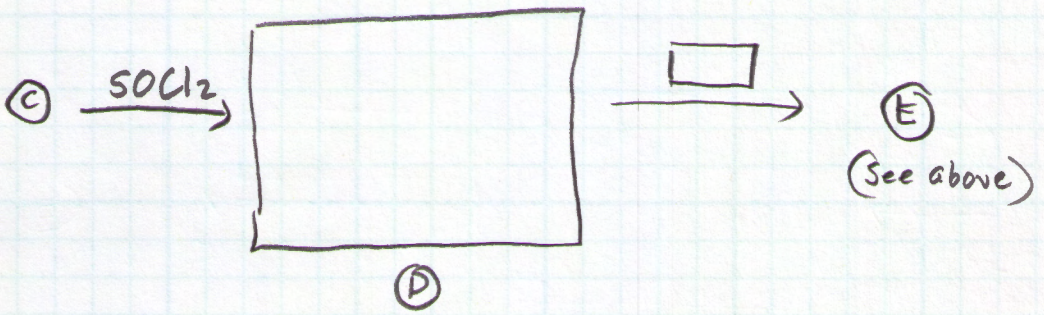


B

$C_{13}H_{20}O_2$



C



D