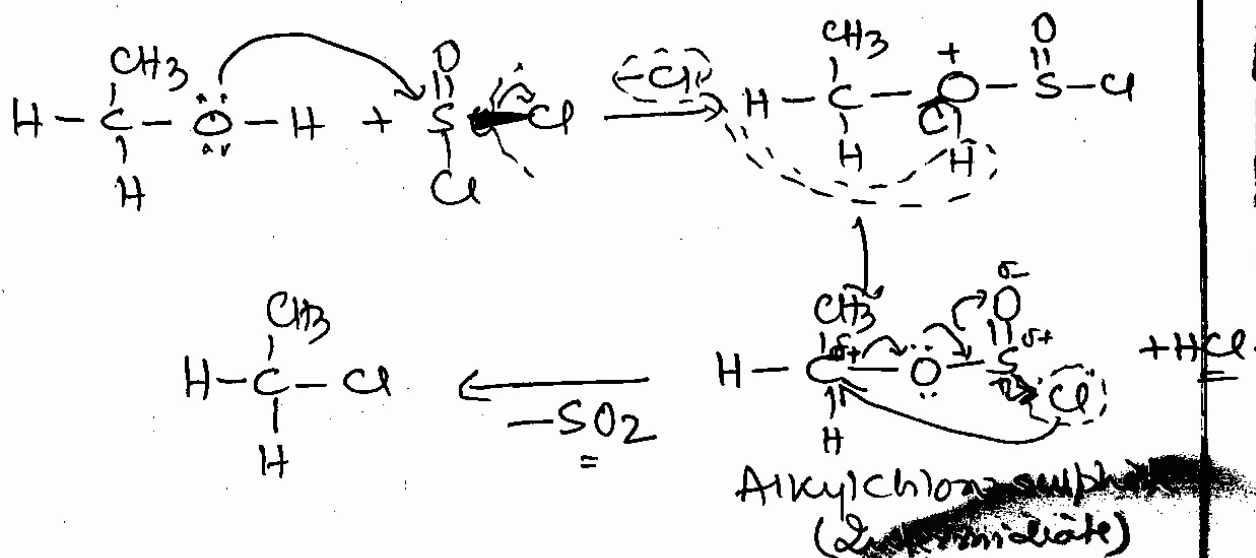


② Nucleophilic Substitution reaction intramolecular or SNⁱ reaction OR Substitution nucleophilic internal SNⁱ

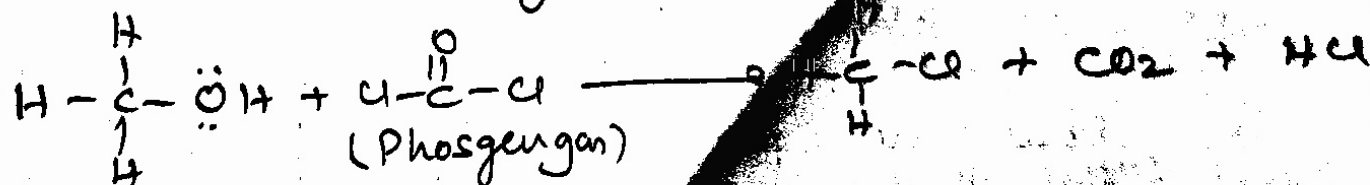
In this reaction nucleophile is formed internally which attacks on substrate to form product. Generally nucleophile attack from front side so it show retention in the reaction. For example:

1. $R-OH + SOCl_2 \longrightarrow R-Cl + SO_2 + HCl$
This reaction is also called Darzen's process.
2. $R-OH + PCl_5 \longrightarrow R-Cl + POCl_3 + HCl$

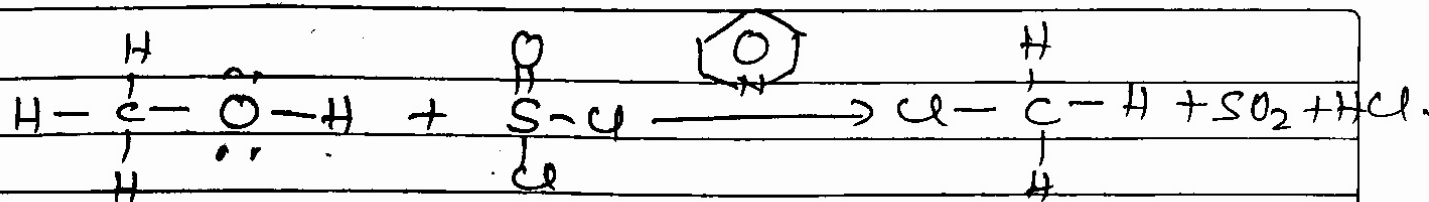
Mech.



Note: SNⁱ reaction form intermediate i.e. 4-centered type. ~~Reaction~~ So it is called 4-centered type reaction also.

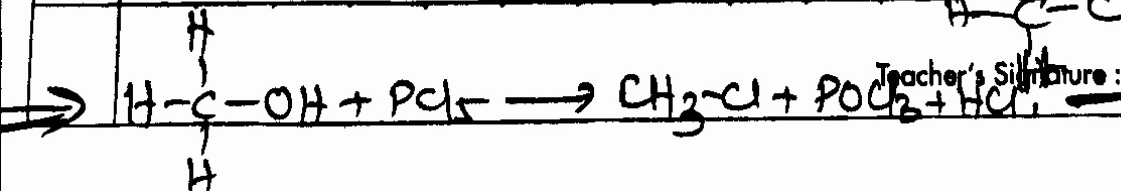
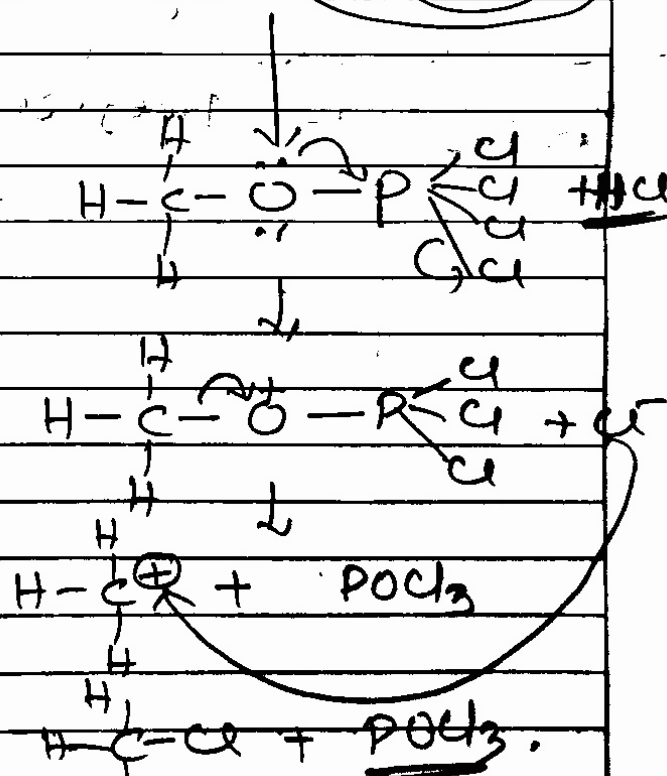
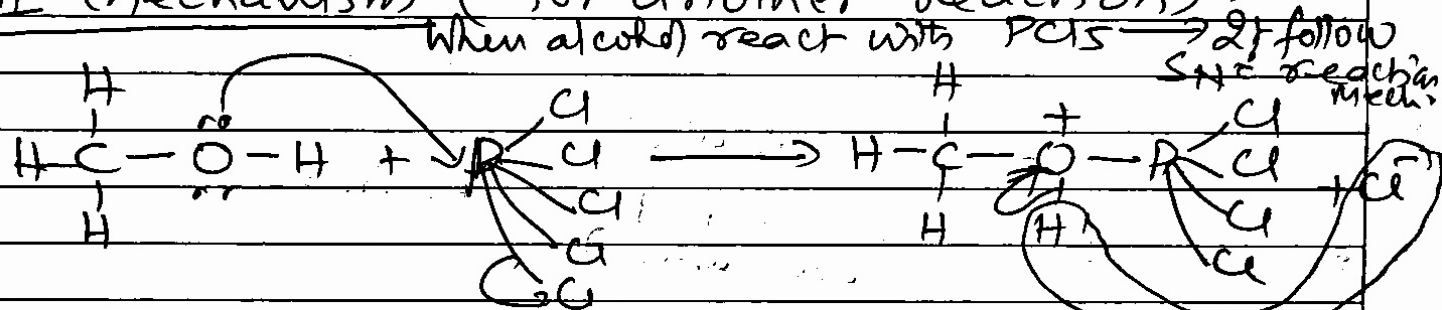


It is also SNⁱ reaction.



In presence of pyridine walden inversion take place, means nucleophile has attacked from back side so it will show inversion rather than retention. Rearrangement is possible in $\text{S}_\text{N}^\text{E}$ reaction.

II Mechanism (for another reaction) :-



Teacher's Signature: _____

Difference between S_N1 & S_N2 rxn:

	S_N1	S_N2
(i) Order of reaction	$r \propto [R-X]$ One	$r \propto [R-X][Nu^-]$ Two
(ii) Steps in mech.	Two steps	One step
(iii) Solvent	Polar protic (Solvolysis)	Polar Aprotic (Solvolysis do not)
(iv) Preference of R-X	$3^\circ > 2^\circ > 1^\circ > CH_3-X$	$CH_3X > 1^\circ > 2^\circ > 3^\circ$
(v) Inversion/Retention	Retention is general. but inversion is also possible.	Inversion is general.
(vi) Racemization	Racemization is possible. (In strong carbocation).	Racemization is not possible.
(vii) Strength of nucleophiles	Weak nucleophile is preferred.	Strong nucleophiles are preferred.