Answer on Question 61246 - Chemistry – Organic Chemistry

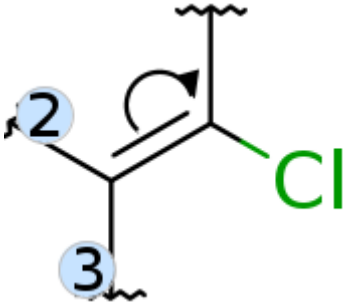
Question:
Which one is more reactive towards nucleophilic substitution reaction?why?

a)CH_2=CH-Cl. b)C_6H_5Cl. c)CH_3CH=CH-Cl. d)$ClCH_2CH$=CH2

Answer: d) $ClCH_2CH=CH_2$

There 2 possible factors that can explain that:

1) Due to positive mesomeric effect, relative positive charge of the carbon atom, chlorine is attached to, is decreased, thus lowering its reactivity in nucleophilic reactions.



2) As in all other compounds C-Cl bond is conjugated with unsaturated C=C bond or aromatic system, its strength and, thus, stability towards nucleophilic substitution is increased, due to delocalization of unshared pair of electrons of chlorine with unsaturated system.