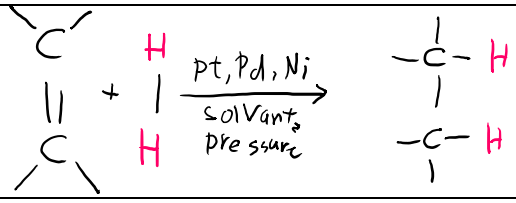
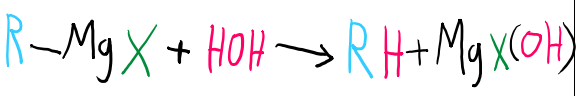
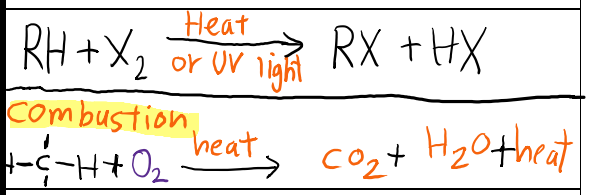
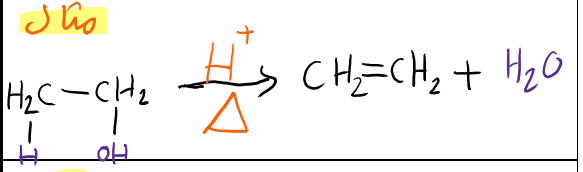
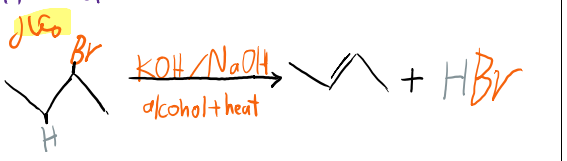
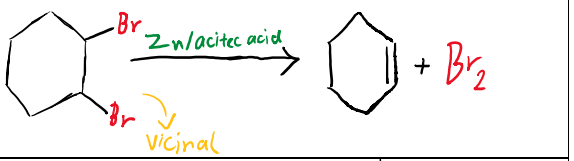
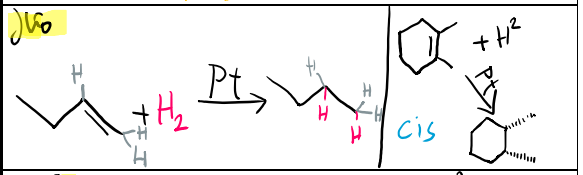
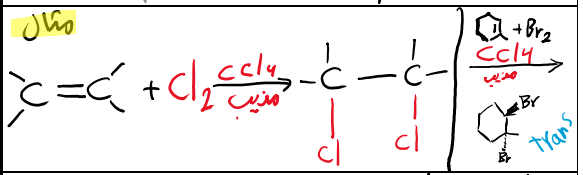
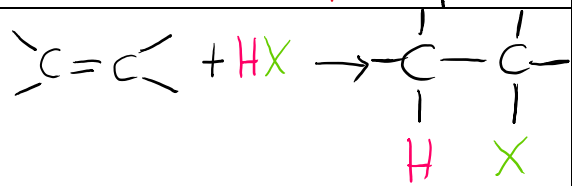
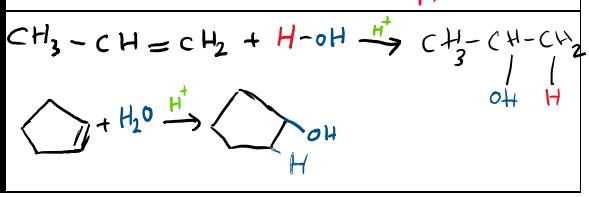
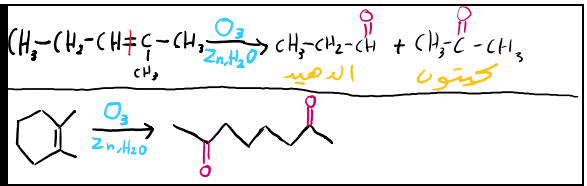
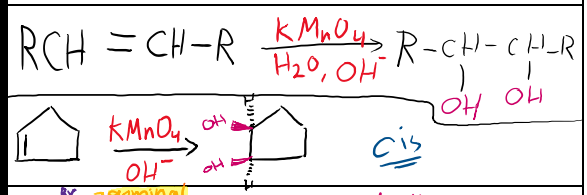
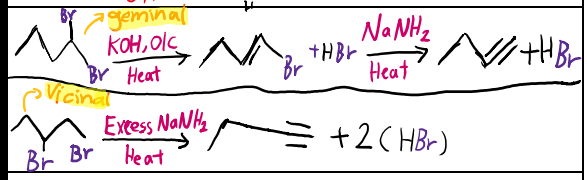
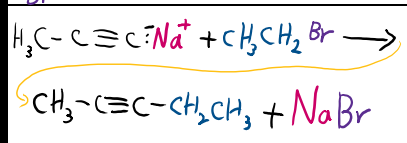
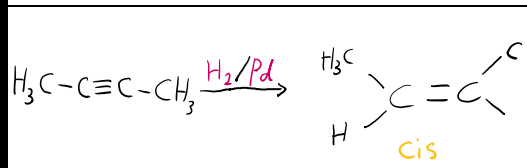
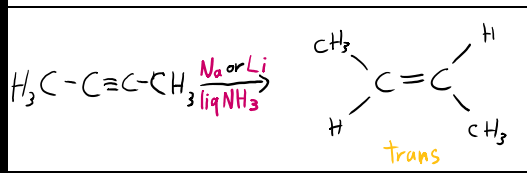
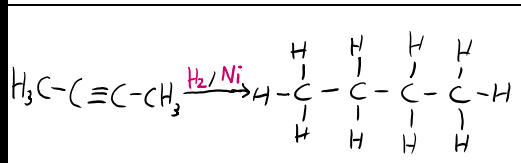
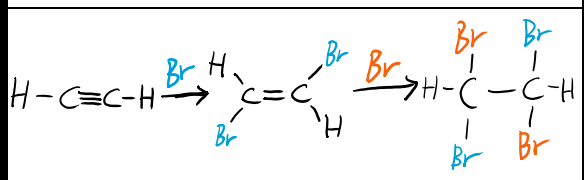
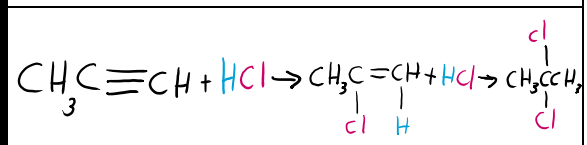
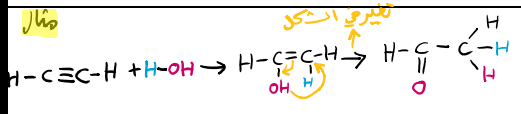
	Reactors متفاعلات	Reagent مساعدة	Catalysts محفزه	products نواتج	The reaction التفاعل
Preparation of alkanes Hydrogenation	akene	H_2	Metal :: Pt \ Pd \ Ni Solvent, pressure	alkane	
	alkyne	2 (H_2)			
Hydrolysis	Grignard reagent: R-MgX	HOH	Acid :: H^+	RH+MgX(OH)	
Reactions of alkanes (free radical substitution)	Alkane halogenation	X_2	Heat \ ultraviolet light	RX + HX	
Preparation of akenes	ROH (Alkane-OH) قاعده سايتزيف Dehydration of alcohol	—	Mineral acid: H_2SO_4 \ H^+ \ H_3PO_4 + Heat	Alkene + H_2O	
	RX (Alkane-X) Dehydrohalogenation of alkyl halides	—	Alkaline condition: KOH or NaOH + alcohol + heat	Alkene + (X_2 \ HX)	
	RX (Alkane-X) Dehydrohalogenation of alkyl halides (vicinal)	—	Zn \ acetic acid Or NaI \ acetone		
Reactions of Alkenes (1) (Electrophilic addition reaction)	Alkene hydrogenation	H_2	pt	Alkane	
	Alkene halogenation	X_2 \ X +X	Room temperature + ccl_4	Vicinal dihalide (alkane-X-X)	
	Alkene Addition of acids	Acids :: HX قاعده ماركينوكوف		RX (Alkane-X) \	
	Alkene Addition of water	H-OH قاعده ماركينوكوف	Acid	Alcohol (R-OH) Single bonds	

Reactions of Alkenes (2) (Oxidation)	Alkene Addition of ozone	O_3	Zn \ H_3O^+ or H^+	Open alkene = 2 open aldehyde or ketone Cycloalkene = 1 open aldehyde or ketone	
	Alkene Oxidating using $KMnO_4$	$K^+MNO^-_4$	OH^- , H_2O	ROH-ROH +MnO_2 + K^+OH^-	
Preparation of Alkyne	Dihalide alkyl Dehydrohalogenation of alkyl dihalides	—	Geminal = KOH , $NaNH_2$ Vicinal = excess NaNOH + heat	Alkyne + HX + HX	
	Sodium acetylide R≡R-NA Reaction of sodium acetylide with alkyl halide	Alkyl halide R-X		Alkyne + NaX	
Reactions of alkyne (electrophilic addition reaction) Hydrogenation	Alkyne	H_2	Pd	Cis alkene	
	Alkyne	H_2	Na or Li + liq NH_3	trans alkene	
	Alkyne	2 H_2	Ni	alkane	
Reactions of alkyne (electrophilic addition reaction)	Alkyne halogenation	X_2 or 2 X_2		Dihalide alkene Tetrahalide alkane	
	Alkyne قاعده ماركينوكوف Addition of hydrogen halide	HX or 2 HX		halide alkene dihalide alkane	
	Alkyne قاعده ماركينوكوف hydration	H-OH	H_2SO_4 , $HgSO_4$	Ethyne = aldehyde Others = ketone	

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