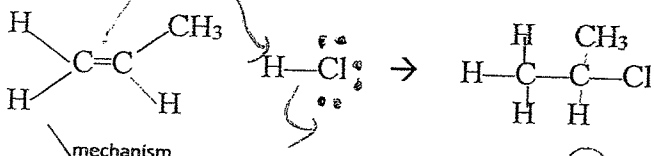
Organic Chemistry I (CHM 335) Fall 16 Dr. Hahn MW 12:30pm Quiz III 11/7 M Exam # _____

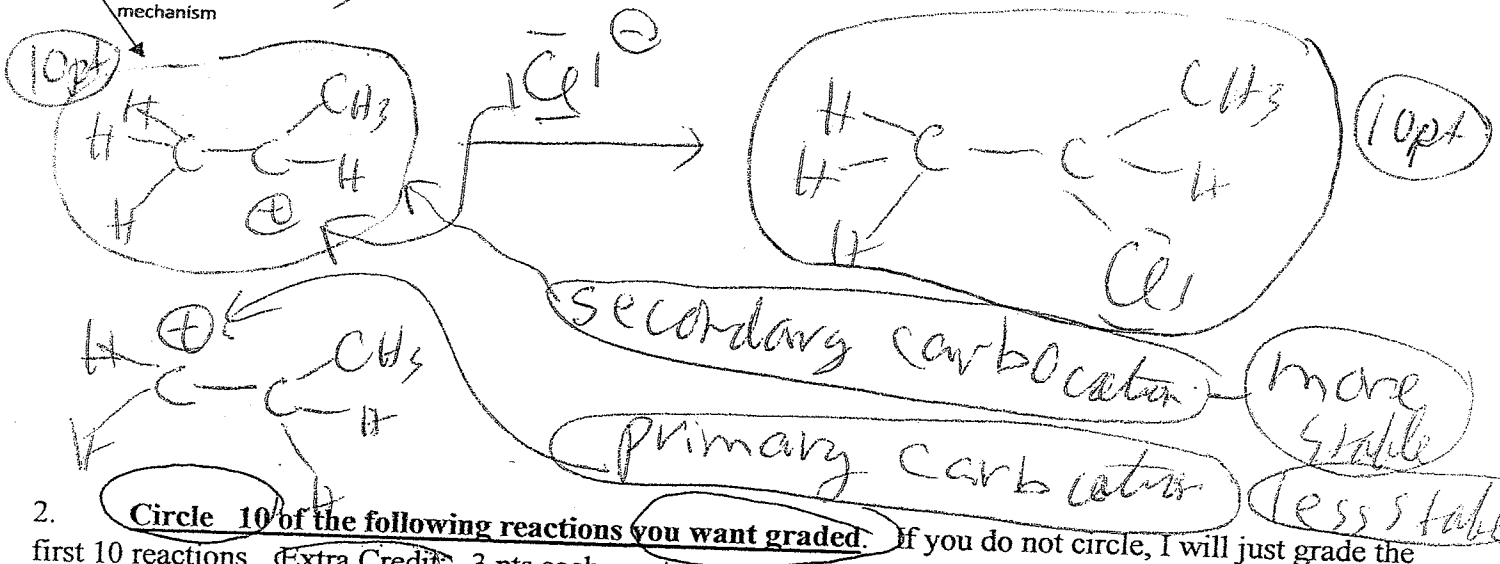
Sign Name Key Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (50 total pts)

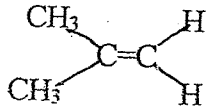
1. Complete the reaction mechanism for electrophilic addition to an alkene of showing regioselectivity. 20pts

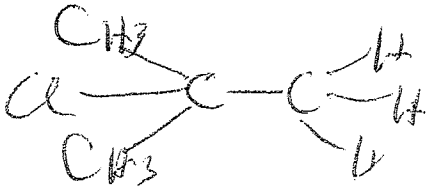


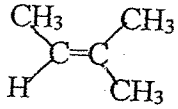
(this line is overall reaction, this question is mechanism)

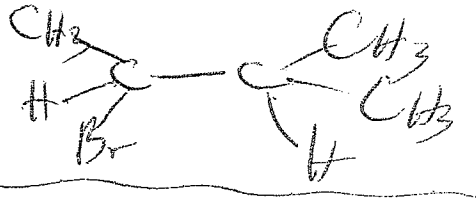


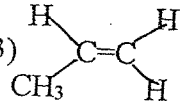
2. **Circle 10 of the following reactions you want graded.** If you do not circle, I will just grade the first 10 reactions. Extra Credit: 3 pts each reaction **up to a maximum of 9 extra credit** points. (3x10=30pt

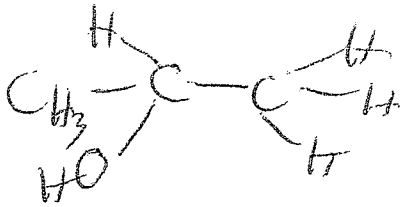
(1)  + HCl →

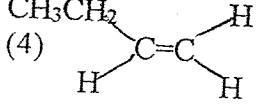


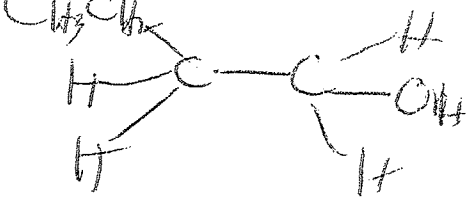
(2)  + H Br (with peroxide) → antimark

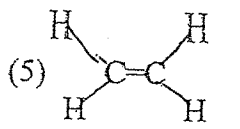
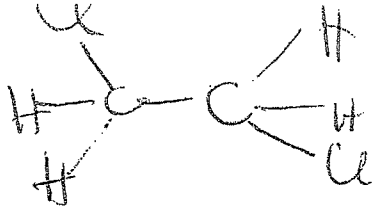


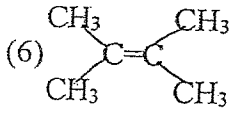
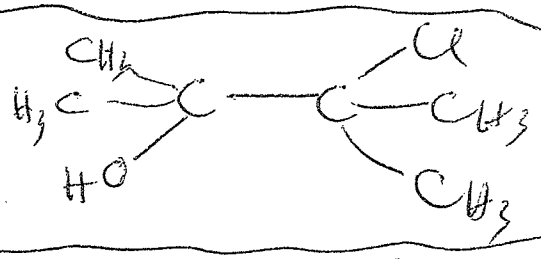
(3)  $Hg(OAc)_2$, H_2O, $NaBH_4$ (Mark)

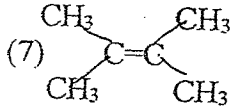
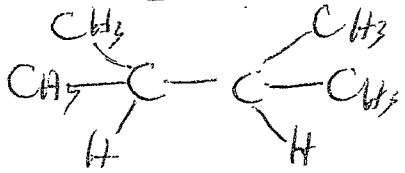


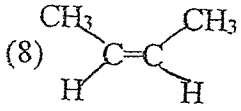
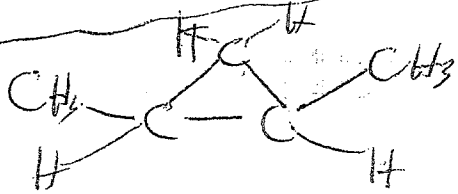
(4)  BH_3: THF, H_2O_2, OH^- (antimark)

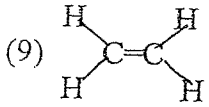
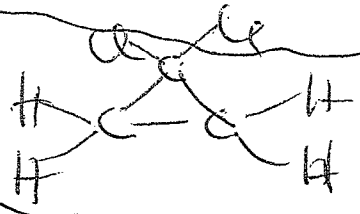


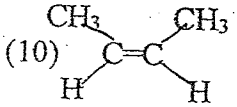
(5)  Cl_2 

(6)  Cl_2, H_2O 

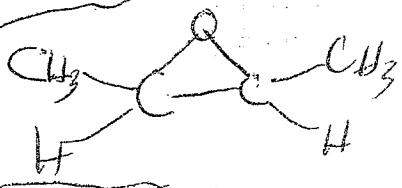
(7)  H_2, Pt 

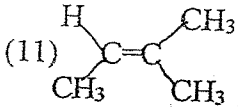
(8)  CH_2I_2 $Zn(Cu)$ 

(9)  $CHCl_3$, NaOH, H_2O 

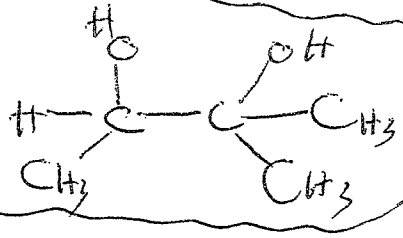
(10)  MCPBA

ox too far ½ off

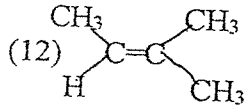


(11)  OsO_4, H_2O_2

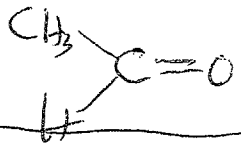
weak ox

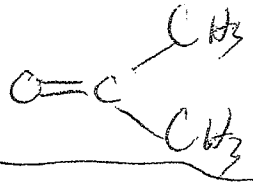


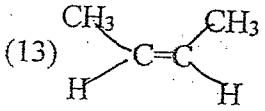
ox not strong enough ½ off

(12)  O_3

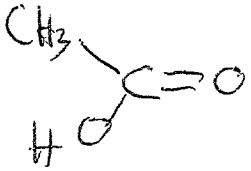
medium ox

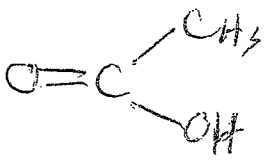


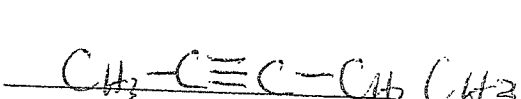


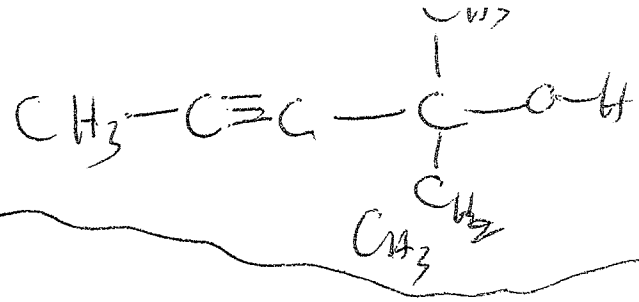
(13)  $KMnO_4$, hot

Strong ox

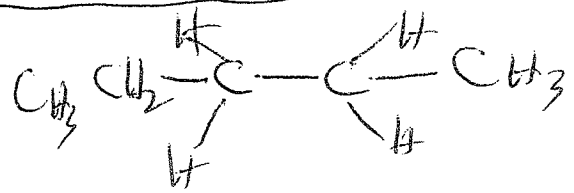




(14) $CH_3-C\equiv C-H$ $NaNH_2$  CH_3-CH_2-I 

(15) $CH_3-C\equiv C^{\ominus}\,Na^{\oplus}$ + $CH_3-CH_2-C(CH_3)=O$ $\xrightarrow{H_3O^+}$ 

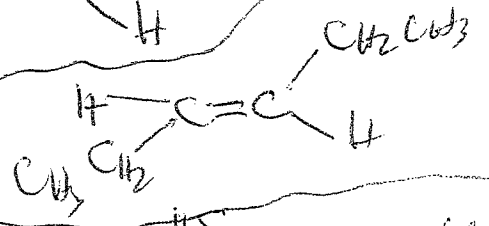
(16) $CH_3CH_2-CH(H)-CH(Br)-H$ (H, Cl) $\xrightarrow{NaNH_2}$ $CH_3CH_2-C\equiv C-H$

(17) $CH_3-CH_2-C\equiv C-CH_3$ + H_2, Pd $\longrightarrow$ 

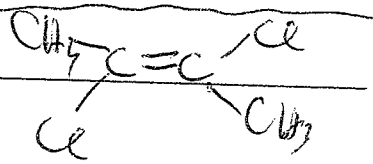
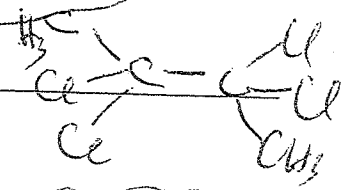
H2 off
reduced too far or
stereo

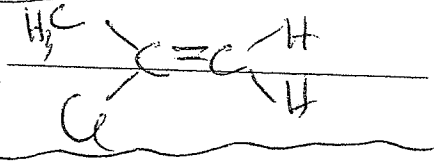
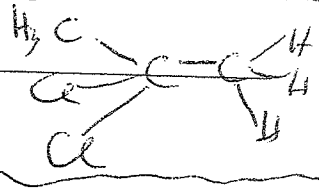
(18) $CH_3-C\equiv C-CH_3$ Lindlar's catalyst $\longrightarrow$ 

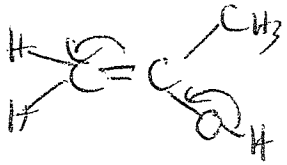
syn, stop at =

(19) $CH_3-CH_2-C\equiv C-CH_2-CH_3$ Na/NH_3 $\longrightarrow$ 

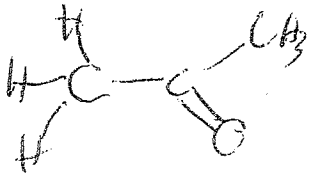
anti, stop at =

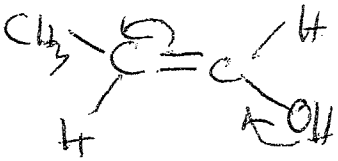
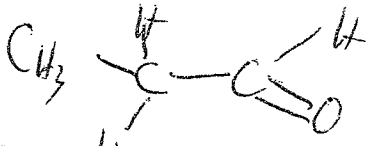
(20) $CH_3C\equiv C\,CH_3$ Cl_2 (one mole) $\longrightarrow$  Cl_2 (one mole) $\longrightarrow$ 

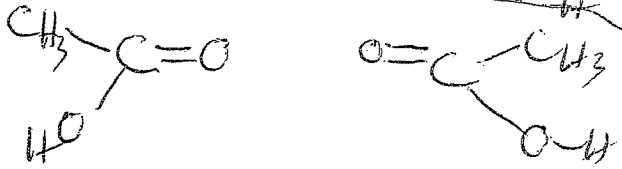
(21) $CH_3-C\equiv C-H$ 1 mol HCl $\longrightarrow$  1 mol HCl $\longrightarrow$ 

(22) $H-C\equiv C-CH_3$ H_2O, $HgSO_4$, H_2SO_4 $\longrightarrow$ 

mark

tautomer $\longrightarrow$ 

(23) $CH_3-C\equiv CH$ Sia_2BH, H_2O_2, NaOH $\longrightarrow$  $\longrightarrow$ 

(24) $CH_3-C\equiv C-CH_3$ hot $KMnO_4$ $\longrightarrow$ 

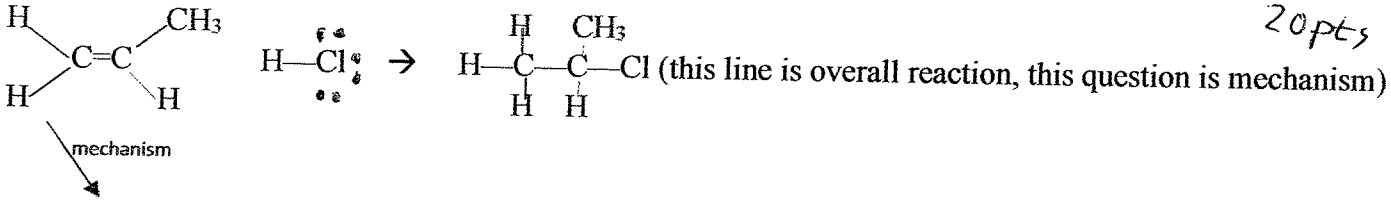
ox
cleavage

Organic Chemistry I (CHM 335) Fall 16 Dr. Hahn MW 12:30pm Quiz III 11/7 M Exam # _____

Sign Name _____ Print Name _____

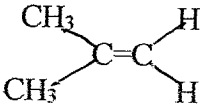
Please show work on all questions for partial credit even on questions which do not specify. (50 total pts)

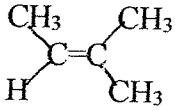
1. Complete the reaction mechanism for electrophilic addition to an alkene of showing regioselectivity. 20pts

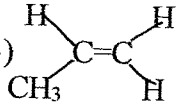


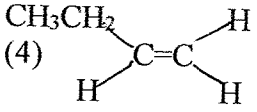
(this line is overall reaction, this question is mechanism)

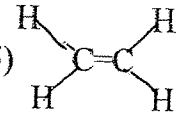
2. **Circle 10 of the following reactions you want graded.** If you do not circle, I will just grade the first 10 reactions. Extra Credit: 3 pts each reaction **up to a maximum of 9 extra credit** points. (3x10=30pt

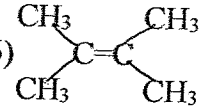
(1)  + HCl →

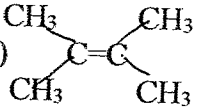
(2)  + H Br (with peroxide) ⟶

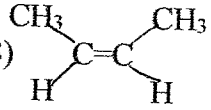
(3)  $Hg(OAc)_2$, H_2O, ⟶ $NaBH_4$

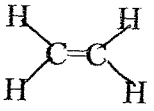
(4)  BH_3: THF, H_2O_2, OH^- ⟶

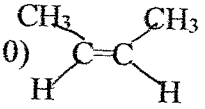
(5)  $\xrightarrow{Cl_2}$

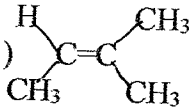
(6)  $\xrightarrow{Cl_2,\ H_2O}$

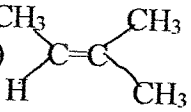
(7)  $\xrightarrow{H_2,\ Pt}$

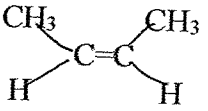
(8)  $\xrightarrow[Zn(Cu)]{CH_2I_2}$

(9)  $\xrightarrow{CHCl_3,\ NaOH,\ H_2O}$

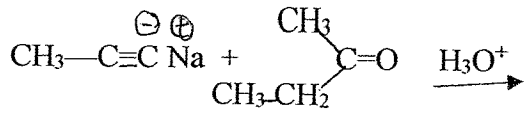
(10)  $\xrightarrow{MCPBA}$

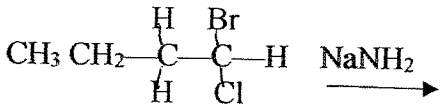
(11)  $\xrightarrow{OsO_4,\ H_2O_2}$

(12)  $\xrightarrow{O_3}$

(13)  $\xrightarrow{KMnO_4,\ hot}$

(14) $CH_3—C\equiv C—H \xrightarrow{NaNH_2} \xrightarrow{CH_3-CH_2-I}$

(15) 

(16) 

(17) $CH_3\text{-}CH_2\text{-}C{\equiv}C\ CH_3$ + H_2, Pd ⟶

(18) $CH_3\text{-}C{\equiv}C\text{-}CH_3$ Lindlar's catalyst ⟶

(19) $CH_3\text{-}CH_2\text{-}C{\equiv}C\ CH_2\text{-}CH_3$ Na/NH_3 ⟶

(20) $CH_3C{\equiv}C\ CH_3$ Cl_2 (one mole) ⟶ ____ Cl_2 (one mole) ⟶ ____

(21) $CH_3\text{-}C{\equiv}C\text{-}H$ 1 mol HCl ⟶ ____ 1 mol HCl ⟶ ____

(22) $H\text{-}C{\equiv}C\text{-}CH_3$ H_2O, $HgSO_4$, H_2SO_4 ⟶

(23) $CH_3\text{-}C{\equiv}C\ H$ Sia_2BH, ⟶ H_2O_2, NaOH ⟶

(24) $CH_3\text{-}C{\equiv}C\text{-}CH_3$ hot $KMnO_4$ ⟶