

WBSU  
2018

QUESTIONS ON ALKENES (C=C)

[The figures in the R.H.S. indicate full marks]

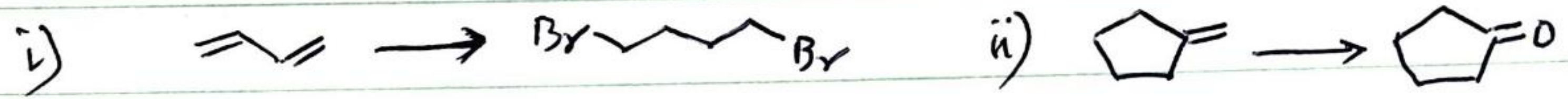
13. a) Acetylene is less reactive towards bromine than ethylene - Explain. 2

d) Reactions of both 1-butene and 2-butene with HCl give the same product but with different rates. Explain the observation with the help of energy profile diagram and hence indicate the faster reaction between them. Comment on the regio and stereoselectivity of the reactions. 4

e) Carry out the following conversion showing plausible mechanism. 2

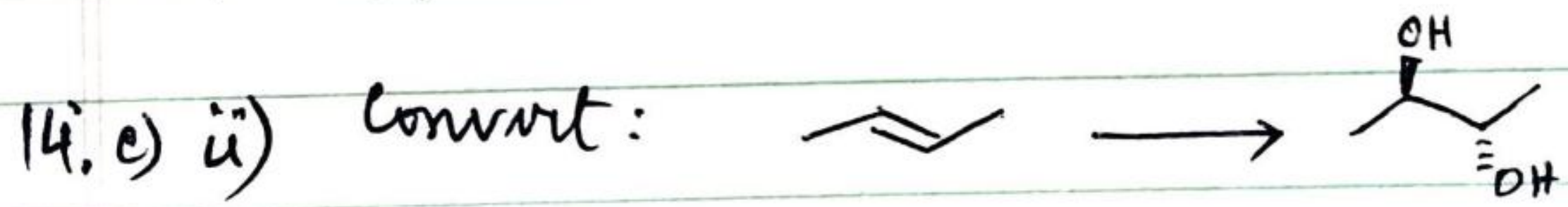
C1=CCCCC1  $\longrightarrow$  C1CCC(O)C1

14. a) Carry out the following conversions showing mechanisms. 2 x 3 = 6

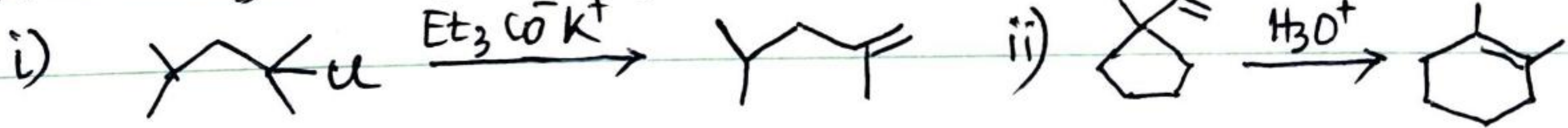


b) Dehydration with conc. H<sub>2</sub>SO<sub>4</sub> of either (R) or (S) PhCH(OH)CH<sub>2</sub>CH<sub>3</sub> lead to the same product. Write the product and explain the mechanism. 2

2017. 13. b) Convert the following:

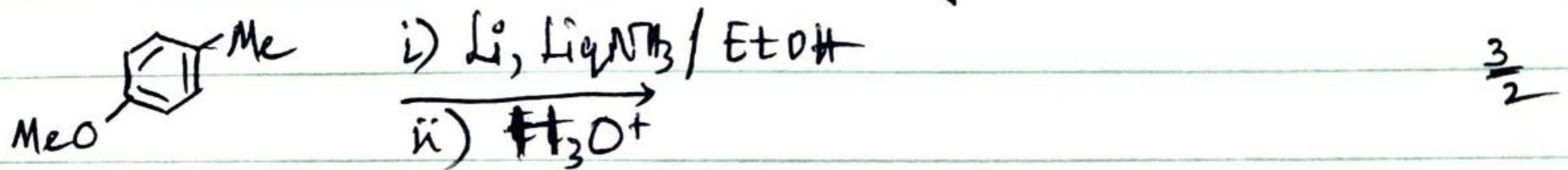


d) Account for the following conversions with reasons. 2 x 2



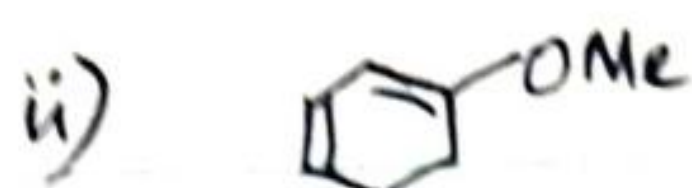
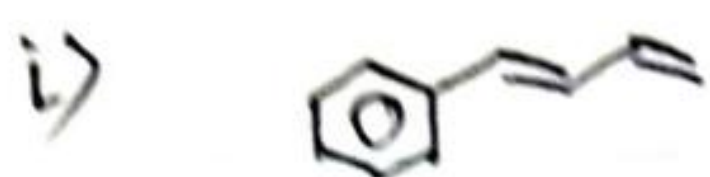
2016. 13. b) How would you convert trans-2-butene to cis-2-butene through epoxidation reaction? Show the mechanisms involved. 2

14. a) Predict the products of the following reactions with mechanism.



\* Among the halogen hydrides, only HBr is capable of showing peroxide effect when added to an unsymmetrical alkene. Justify. 2

2015] 5. a) Predict the regiochemistry of both the 1,2- and the 1,4-adducts formed by bromination of each of the following dienes: 3



b) Explain why: Electrophilic additions of H-X to alkenes are much faster in water than that of in gas phase. 2

c) Write down the structure of ozonides if 2,3-dimethyl-1-butene is subjected to ozonolysis in presence of formaldehyde. Give mechanism of ozonide formation. 3

2014] 6. c) Carry out the following conversion:  $\text{MeO}-\text{C}\equiv\text{C}-\text{Me} \rightarrow \begin{matrix} \text{Me} & \text{CH}_3 & \text{H} \\ & \diagdown & / \\ & \text{C} & - & \text{C} \\ & / & \diagdown \\ \text{H} & & \text{Me} \end{matrix}$  2

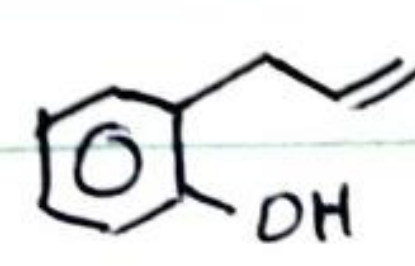
e) How many ozonides can be formed from  $\text{CH}_3\text{CH}=\text{CHCHMe}_2$ ? Explain with mechanism. 3

2013] 5. a) Treatment of  $\text{Me}_3\text{C}-\text{CH}=\text{CH}_2$  and  $\text{Me}_3\text{C}-\text{CHOH}-\text{CH}_3$  with conc.  $\text{HCl}$  gives two same isomeric chlorides. What are two products. Explain. 2

d) ii) Predict products }  $\text{cis-2-butene} \xrightarrow[\text{moist } \text{CH}_3\text{CO}_2\text{H}]{\text{I}_2/\text{CH}_3\text{CO}_2\text{Ag}}$  with mechanism. 2

6. a) Though conjugated dienes are more stable than the non-conjugated dienes, former dienes undergo addition reaction more rapidly than the latter. Explain. 2

f) Convert:  $\text{CH}_3-\text{C}\equiv\text{CH} \longrightarrow \text{CH}_3-\text{CH}_2-\text{CHO}$  2

2012] 5. a) Predicts Products }  i) aq.  $(\text{HgOAc})_2$  ? with mechanism } ii)  $\text{NaBH}_4/\text{NaOH}$  2

e) What happens when buta-1,3-diene is reacted with  $\text{HBr}$  at  $-80^\circ\text{C}$

and at  $40^\circ\text{C}$ ? Predict the product composition in each case and offer proper mechanism explanation in support of your answer. Also draw the energy profile for the reaction. 4

6. a) Starting from (E)-butene prepare meso and dl-butane-2,3-diol separately. Show the reagents and stereochemistry. 4

d) Show how many ozonides are expected to form when 2-pentene is reacted with ozone in the presence of formaldehyde.