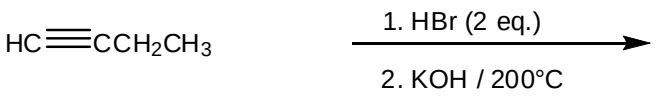
**Chapter 09 Worksheet 01**

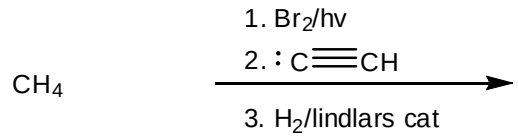
**Alkene and Alkyne Reactions**

Please provide the major product for the following reactions. Be sure your drawing indicates stereochemistry if applicable.

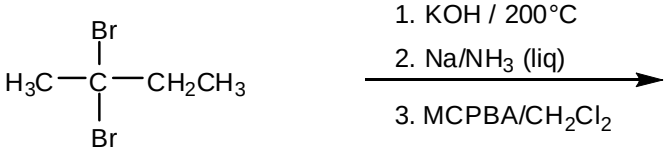
**1.**



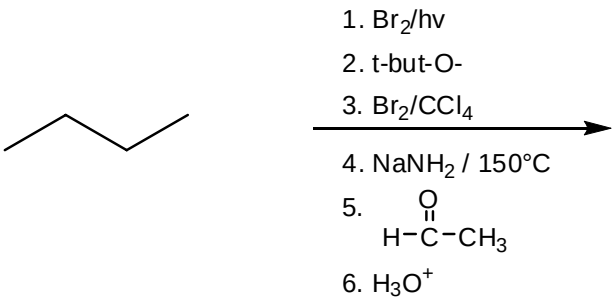

**2.**



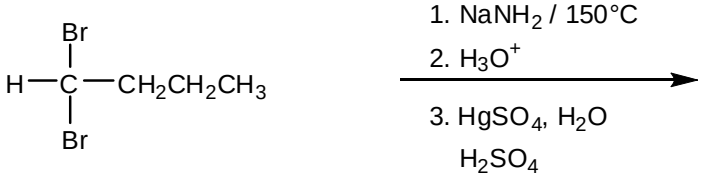

**3.**



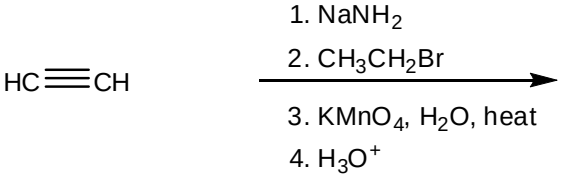

**4.**



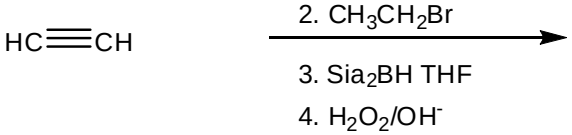

**5.**



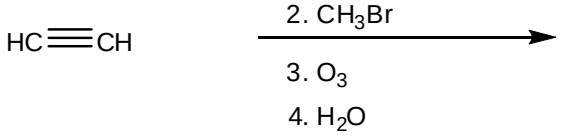

**6.**



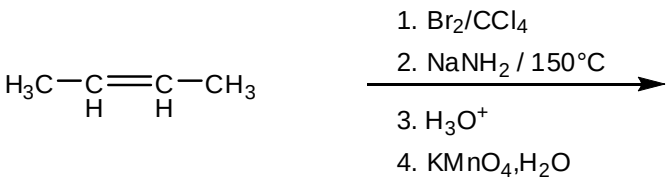
**7.**


HC≡CH
1. NaNH2
2. CH3CH2Br
3. Sia2BH THF
4. H2O2/OH-

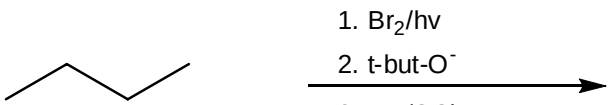
**8.**


HC≡CH
1. NaNH2
2. CH3Br
3. O3
4. H2O

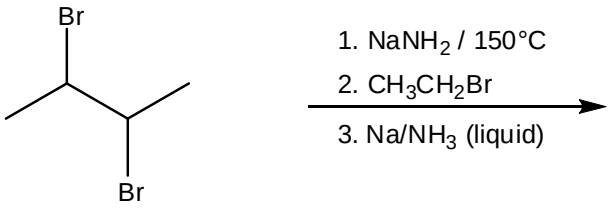
**9.**


H3C—C(H)=C(H)—CH3
1. Br2/CCl4
2. NaNH2 / 150°C
3. H3O+
4. KMnO4,H2O

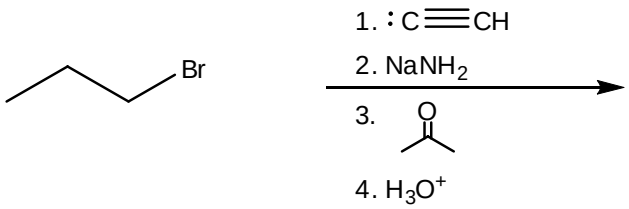
**10.**


1. Br2/hv
2. t-but-O-
3. Br2/CCl4
4. KOH / 200°C

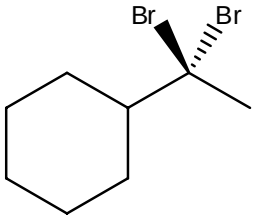
**11.**


Br
Br
1. NaNH2 / 150°C
2. CH3CH2Br
3. Na/NH3 (liquid)

**12.**


Br
1. :C≡CH
2. NaNH2
3.
O
4. H3O+

**13.**



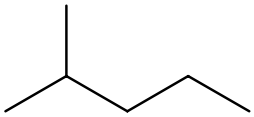

1. $NaNH_2$ / 150°C
2. PhCHO
3. $H_3O^+$
4. $H_2$/Pd

**14.**

$CH_2{=}CH\text{-}CH_2CH_3$

1. $Br_2/CCl_4$
2. KOH ./ 200°C
3. $H_2/Pd(BaSO_4)$ quinoline, $CH_3OH$
4. MCPBA
5. $H_3O^+$

**15.**



1. $Br_2$/hv
2. t-but-$O^-$
3. $KMnO_4$, warm, conc

**16.**

$CH_3CH_2C{\equiv}C{-}H$

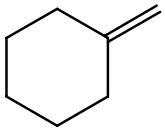
1. $HgSO_4/H_2O/H_2SO_4$
2. $:C{\equiv}CH$
3. $H_3O^+$
4. $Na/NH_3$ (liq.)

**17.**

$CH_3CH_2C{\equiv}C{-}H$

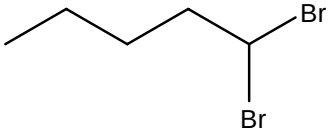
1. $Sia_2BH$ THF
2. $H_2O_2/OH^-$
3. $CH_3C{\equiv}C:$
4. $H_3O^+$
5. $H_2$/lindlars cat

**18.**



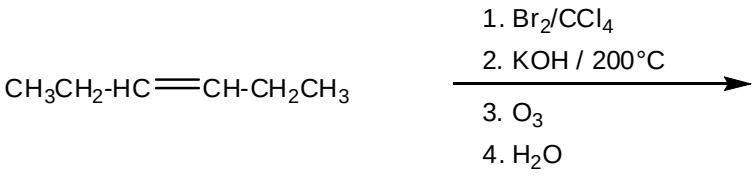
1. HBr/ROOR
2. $:C{\equiv}CH$
3. $KMnO_4$, $H_2O$ neutral

**19.**

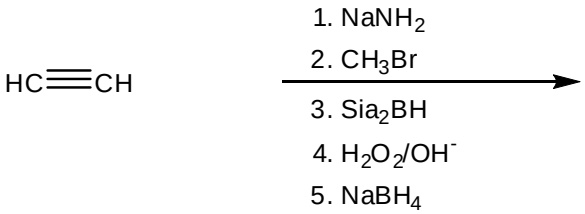



1. $NaNH_2$ / 150°C
2. $CH_3CH_2Br$
3. $H_2/Pd(BaSO_4)$ quinoline
4. $MCPBA/CH_2Cl_2$

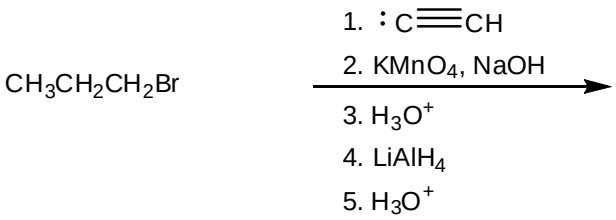
**20.**


CH3CH2-HC=CH-CH2CH3
1. Br2/CCl4
2. KOH / 200°C
3. O3
4. H2O

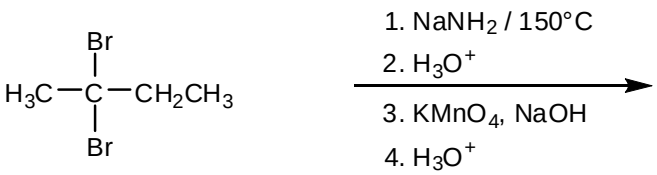
**21.**


HC≡CH
1. NaNH2
2. CH3Br
3. Sia2BH
4. H2O2/OH-
5. NaBH4

**22.**


CH3CH2CH2Br
1. :C≡CH
2. KMnO4, NaOH
3. H3O+
4. LiAlH4
5. H3O+

**23.**


Br
H3C—C—CH2CH3
Br
1. NaNH2 / 150°C
2. H3O+
3. KMnO4, NaOH
4. H3O+