

CHEMISTRY

BOOKS - MS CHOUHAN

HYDROCARBONS (ALKYNES)

Level 1

1. Complete

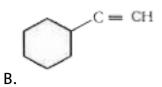
the

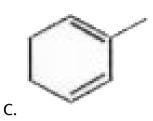
following

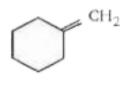
reaction

$$C - CH_3 \xrightarrow{\text{PCI}_5} (A) \xrightarrow{\text{mineral od} \atop \text{mineral od}} (B) ; \text{ Product } (B) \text{ is } :$$

$$A = CH_2$$







D.

Answer: B



2.

$$extstyle rac{Br_2}{CCl_4} extstyle rac{(\,i\,)\, ext{alc. KOH}}{(\,ii\,)\,NaNH_2} extstyle A)$$
 , Product (A) is :

/

A.
$$H_2C=CH-CH=CH_2$$

B.
$$CH_3 - C \equiv C - CH_3$$

$$\mathsf{C.}\,CH_3-CH_2-C\equiv CH$$

$$D. CH_3 - CH = C = CH_2$$

Answer: B



$$D$$
 Et_2O
 $J \xrightarrow{H^*} (K)$

Product (K) of the above reaction is:

$$C = C - Be$$

A.

$$C = C - Et$$

В.

$$C = C - CH_2 - CH_3$$

$$C = C - CH_3$$

Answer: B



4.

$$CH_{3}-CH_{2}-CH_{2}-C\equiv CH+\mathop{LiNH_{2}}\limits_{ ext{Lithium amide}}
ightarrow\left(A
ight)rac{\left(\mathit{CH}_{3}
ight){}_{2}SO_{4}}{}\left(B
ight)$$

Give the structural formula of compound (B):

A.
$$CH_3-\left(CH_2
ight)_2-C\equiv C-SO_3H$$

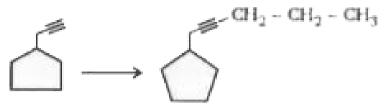
B.
$$CH_3-\left(CH_2
ight)_2-C\equiv C-CH_3$$

C.
$$CH_3-\left(CH_2
ight)_2-C\equiv C-CH_2-O-\mathop{S}\limits_{||}^{||}-H$$

D.
$$CH_3-CH_2-C\equiv C-CH_2$$

Answer: B





5. , This

conversion can be achieved by:

A.
$$NaNH_2, CH_3CHO$$

$$\operatorname{B.}{NaNH_2}, CH_3-CH_2-CH_2-Br$$

C.
$$KOH$$
, $CH_3 - CH_2 - Br$

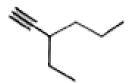
D.
$$KOH, CH_2 - CH_2 \ \mid \ \mid \ \mid Br \ \mid Br$$

Answer: B

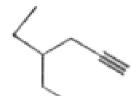


Watch Video Solution

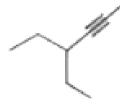
6. Which alkyne will give 3- Ethyl hexane on catalytic hydrogenation



A.



В.



C.

D. All of these

Answer: D



7. Reactant P gives products Q of R.

$$(CH_2)_4$$
 \longrightarrow $(CH_2)_4$ \longrightarrow $(CH_2)_4$ \longrightarrow $(H_2C)_4$ \longrightarrow $(H_2$

The possible reagents are:

(I) 2Na/liq.
$$NH_3$$
 (II) $H_2/Pd/CaCO_3$ (quinoline) (III) $2H_2/Pd/C$

The correct statement with respect to the above conversion is/are:

- A. Q is obtained on treatment with reagent (I)
- B. R and Q are obtained on treatment with reagent (II)
- C. R is obtained on treatment with reagent (I)
- D. R is obtained on treatment with reagent (II)

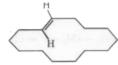
Answer: C



8. $Br-(CH_2)_{12}-C\equiv CH\stackrel{NaNH_2}{\longrightarrow}(A)\stackrel{
m Lindlar}{\longrightarrow}(B)$, Product (B)

is





В.

D.
$$Br - (CH_2) - CH = CH_2$$

Answer: C



Watch Video Solution

9. $Ph-C\equiv CH \xrightarrow{MeO}_{MeOH}$ major product of the reaction is

A.
$$H \subset -C$$

C.
$$Ph-C\equiv C-OMe$$

Ph -
$$G = CH_2$$

OMe

Answer: B



10.
$$Ph-\stackrel{Cl}{\overset{|}{C}}-CH_3\stackrel{3NaNH_2}{\longrightarrow}(A)$$
 , What is product (A) ?

A.
$$Ph - CH = CH_2$$

$$\mathsf{B.}\,Ph-C\equiv CH$$

$$\mathsf{C.}\,Ph-CH_2-CH_3$$

D.
$$Ph-C\equiv \overset{\mathbf{o}}{C}\overset{\oplus}{N}a$$

Answer: D



Watch Video Solution

11. Which combination is best for preparation of the compound (A) shown below?

$$H \longrightarrow_{C}^{CH_3} C - CH_2CH_2CH_2C = CH$$
 $CH_3CH_2 (A)$

$$\begin{array}{c} H_3C \xrightarrow{H} C - CH_2CH_2CH_2Br \xrightarrow{NaC = CH} (A) \\ & A. \quad CH_3CH_2 \end{array}$$

$$\mathsf{B}.\ \mathsf{GH}_3 \\ \mathsf{H} \xrightarrow{\mathsf{CH}_3} \mathsf{C} - \mathsf{CH}_2 \mathsf{CH}_2 \mathsf{CH}_2 \mathsf{Br} \xrightarrow{\mathsf{NaC} = \mathsf{CH}} (A)$$

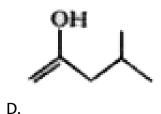
$$\begin{array}{c} \text{H}_{3}\text{C} \xrightarrow{\text{H}} \text{C} - \text{Br} \xrightarrow{\text{1. NaNH}_{2} \cdot \text{NH}_{3}} (A) \\ \text{C} \cdot \text{CH}_{3}\text{CH}_{2} \end{array}$$

Answer: B



Watch Video Solution

12. Which one of the following is the intermediate in the preparation of a ketone by hydration of an alkyne in the presence of sulfuric acid and mercury (II) sulphate?



Answer: D



Watch Video Solution

13.
$$O - CH_2 - C = CH$$
 $\longrightarrow O - CH_2 - C = C - CH_2 - CH_2$

To carry out above conversion, (A) and (B) respectively, are:

A.
$$NaNH_2$$
, $Cl - CH_2 - CH_2 - CH_2 - Br$

B.
$$NaNH_2$$
, $F - CH_2 - CH_2 - CH_2 - Br$

C.
$$NaNH_2$$
, $I-CH_2-CH_2-CH_2-Br$

D.
$$NaNH_2, I-CH_2-CH_2-CH_2-I$$

Answer: C



$H - C \equiv C - Ph$



Product

obtained in this reaction is:

A.
$$Ph-C=CH-I$$

B.
$$Ph-CH-CH_2-I$$

$$\mathsf{C.}\,Ph-C\equiv C-I$$

$$\mathsf{D}.\,I-C\equiv C-H$$

Answer: C





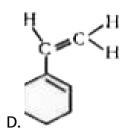
15.

$$\dfrac{(i)\,NaNH_2\,,NH_3}{(\,ii\,)\,CH_3Br}\,$$
 $(A)\,\dfrac{H_2}{ ext{Lindlar catalyst}}\,$ (B) , Product (B) is :

$$C = C - CH^3$$

A.

В.



Answer: C



Watch Video Solution

16. Which of the following alkynes on treatment with H_2 92 mole)/pt gives an optically inactive compound ?

- A. 3-Methyl-1-pentyne
- B. 4-Methyl-1-hexyne
- C. 3-Methyl-1-heptyne
- D. None of the above

Answer: A

17.
$$CaC_2 \stackrel{H_2O}{\longrightarrow} A \stackrel{ ext{Red hot}}{ ext{} Cu ext{ tube}} B.$$
 B is

- A. Toluene
- B. Ethyl-benzene
- C. Benzene
- D. Butyne

Answer: C



18. What is the final product, C, of the following reaction sequence

?

$$H \xrightarrow{1. \text{NaNH}_2} A$$

$$A \xrightarrow{\text{Na. NH}_2(\text{liq.})} B$$

$$B \xrightarrow{\text{Br}_2} C$$

$$\bigvee_{B_{\Gamma}}^{B_{\Gamma}}$$

A.

В.

$$\underbrace{\hspace{1cm} \overset{\text{Br}}{\underset{\text{NH}_2}{\bigvee}}}_{\text{NH}_2}$$

C.

D.

Compound (X) will be:

$$A \longrightarrow CH = CH - C = CH$$

$$R = CH - CH_2 - C = CH$$

$$CH - CH_2 - C = CH$$

D.
$$C = CH - C = CH$$

Answer: A



20. Choose the sequence of steps that describes the best synthesis of 1-butene from ethanol :

A.
$$(1)NaC\equiv CH,$$
 $(2)H_2$, Lindlar Pd

B.
$$(1)NaC\equiv CH,$$
 $(2)Na,$ NH_{3}

C.
$$(1)HBr$$
, heat , (2) $NaC \equiv CH$, $(3)H_2$, Lindlar Pd

HBr,

$$KOC(CH_3)_2,\,DMSO,\,(3)NaC\equiv CH,\,(4)H_2$$
, Lindlar

heat,

(2)

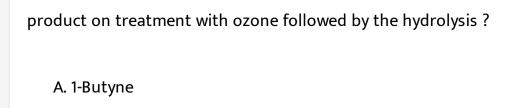
catalyst

D. (1)

Answer: C



21. Which alkyne yields butanoic acid $(CH_3-CH_2-CH_2-CO_2-CO_2H)$. As the only organic

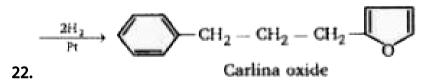


- B. 4-Octyne
- C. 1-Pentyne
- D. 2-Hexyne

Answer: B



Watch Video Solution



Unit of unsaturation in compound (A)?

- **A.** 7
- B. 8

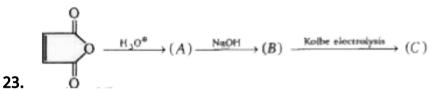
C. 9

D. 10

Answer: C



Watch Video Solution



product (C) of above reaction is:

A.
$$H_2C=CH_2$$

B.
$$CH_3-C\equiv C-CH_3$$

$$\mathsf{C}.\,HC\equiv CH$$

$$D. CH_3 - CH = CH - CH_3$$

Answer: C

24. To convert 1-butyne to 1-D-butanal, one would carry out the following steps:

- (I) Sodium amide, then $D_2{\cal O}$
- (II) Disiamy Iborane, then hydrogen peroxide/sodium hydroxide

(III) The transformation can not be carried out with the indicated reagents.

A. I, followed by II

B. II, followed by I

C. III

D. II

Answer: C



25. An unknown compound (A) has a molecular formula C_4H_6 . When (A) is treated with excess of Br_2 a new substance (B) with formula $C_4H_6Br_4$ is formed. (A) forma a white ppt. with ammonical silver nitrate solution. (A) may be :

- A. But-1-yne
- B. But-2-yne
- C. But-1-ene
- D. But-2-ene

Answer: A



Watch Video Solution

26. 1,2-Dibromopropane on treatment with X moles of NaNH_2` followed by treatment with ethyl bromide gave a pentyne. The

value of X is

A. One

B. Two

C. Three

D. Four

Answer: C



Watch Video Solution

27.
$$CH_3$$
 $\stackrel{|}{\longrightarrow}$ $CH_3 - CH - C \equiv CH \xrightarrow{ ext{excess HBr}}$

The product of the above reaction is:

$$B. CH_3 - CH - C = CH_2$$

Answer: C



28.
$$CH_3-CH=CH-CH_3 \xrightarrow{KMnO_4/H^+}$$
 product in this reaction

A.
$$CH_3-CH_2-\overset{O}{C}-\overset{O}{C}-H$$
B. $CH_3-\overset{O}{C}-C-CH_3$

$$\stackrel{OH}{\stackrel{}{\mid}} \stackrel{OH}{\stackrel{}{\mid}} CH-CH_3$$

$$\mathsf{D}.\,O = CH - CH_3 - CH_2CH = O$$



Watch Video Solution

29. In which reaction last product is $Ph-C\equiv CH$?

A.
$$C_6H_5-\stackrel{|}{\underset{|}{C}}-CH_3 \xrightarrow[]{3NaNH_2} \xrightarrow[Mineral\,oil,\,heat]{NH_4Cl} \xrightarrow[Mineral\,oil,\,heat]{NH_4Cl}$$

$$\text{B.}\ C_6H_5CH = CH_2 \xrightarrow[CCl_4]{Br_2} \xrightarrow[Mineral\ oil,\ heat} \xrightarrow[NH_4Cl]{NH_4Cl}$$

$$\begin{array}{c} O \\ \text{C. } C_6H_5 - \overset{|}{C} - CH_3 \xrightarrow{PCl_5} \xrightarrow{3NaNH_2} \xrightarrow{NH_4Cl} \\ \xrightarrow{\text{Mineral oi, heat}} \end{array}$$

D. All

Answer: D



30. Predict the product of the following reaction sequence.

ethyne
$$(1) ext{ excess } NaNH_2 \longrightarrow (2) ext{ excess } I-CH_2-(CH_2)_2-CH_3$$

- A. 6-iodo-1-hexyne
- B. 1-hexyne
- C. 5-decyne
- D. 1-iodo-1-hexene

Answer: C



31. Give the sequence of reactions to prepare 2-butanol starting from 1-butene.

A. propyne
$$\stackrel{NaNH_2}{\longrightarrow} X \stackrel{n-C_4H_9Br}{\longrightarrow} Y \stackrel{H_2O,Hg^{2+}}{\longrightarrow}$$

B. ethyne $\stackrel{NaNH_2}{\longrightarrow} X \stackrel{n-C_5H_{12}Br}{\longrightarrow} Y \stackrel{H_2O\,,Hg^{2+}}{\longrightarrow} H_2SO_4$

C. 1-hexyne $\stackrel{NaNH_2}{\longrightarrow} X \stackrel{CH_2Br}{\longrightarrow} Y \stackrel{H_2O\,,Hg^{2+}}{\longrightarrow} \stackrel{H_2SO_4}{\longrightarrow}$

D. 1-pentyne $\stackrel{NaNH_2}{\longrightarrow} X \stackrel{C_2H_5Br}{\longrightarrow} Y \stackrel{H_2O\,,Hg^{2+}}{\longrightarrow}$

Answer: B



32. The major product of the reaction of 2-butene with cold alkaline

 $KMnO_4$, is



A.



В.



C.

D.

Answer: D

