



CHEMISTRY

BOOKS - R SHARMA CHEMISTRY (HINGLISH)

ALKYNES

Examples

1. Write the structure and IUPAC name of the following compounds:

(i) Methylacetylene

(ii) Ethylacetylene

(iii) Dimethylacetylene

(iv) Isopropylmethylacetylene

Strategy: Alkynes are named like the alkenes except for the following two points:

- (1). The suffix-yne is added to the characteristic root.
- (2). Because the linear arrangement about the triple bond does not lead to geometric isomerism, the prefixes cis-and itrans-are not used.



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2. In how many ways can the structure for the alkyne with molecular formula C_5H_8 be constructed?

Strategy: First arrange five carbon atoms with a continuous C chain and then four C atoms with a side chain. Introduce the triple bond at different locations.



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3. Write the structure and IUPAC names of all possible structural isomeric alkynes corresponding to C_6H_{10} . What type of structural isomerism is exhibited by different pairs of isomers?

Strategy: First explore all the possibilities of placing the triple bond for the straight chain skeleton, followed by that for the branched chain skeleton with one side chain, and finally for the branched chain skeleton with two side chains.



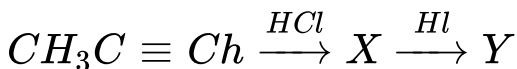
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4. Convert acetic acid into benzene.

Strategy: There is no fixed strategy for conversions but it is best to work backwards. Remember, benzene can be obtained from acetylene, now think how to get acetylene from acetic acid.

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5. Identify the products X and Y in the following reaction:



Strategy: The addition is regioselective and follows markovnikov's rule.

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Follow Up Test 1

1. What is the degree (index or element) of unsaturation for an alkyne?

A. One

B. Three

C. Two

D. Zero

Answer: C



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2. The functional group of alkynes is

A. one π bond

B. two π bonds

C. three π bonds

D. one triple bond between C's

Answer: D



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3. Which of the following compounds possess the same general formula as alkynes?

(i) Dienes

(ii) Cycloalknes

(iii) Bicyclics

(iv) Spiro compounds

A. (i),(ii)

B. (i),(ii),(iii)

C. (i),(ii),(iii),(iv)

D. (i),(iii)

Answer: C



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4. What kind of hybrid orbitals are used by the carbon atoms of alkynes?

(i) $spHO$

(ii) sp^2HO

(iii) dsp^2HO

(iv) sp^3HO

A. (i)

B. (i),(ii)

C. (i),(ii),(iv)

D. (i),(iv)

Answer: D

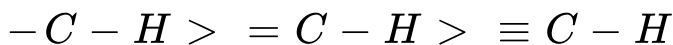


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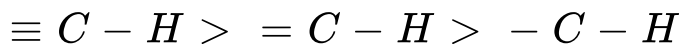
5. Which of the following statements is correct?

A. A carbon-carbon triple bond is shorter and stronger than the a carbon-carbon double bond.

B. the decreasing order of $C - H$ bond length is



C. the decreasing order of $C - H$ bond enthalpies is



D. All of these are correct.

Answer: D



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6. Which of the following isomerism is absent in alkynes?

- A. Chain isomerism
- B. Position isomerism
- C. Geometrical isomerism
- D. Optical isomerism

Answer: C



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7. Which of the following has a perfect linear shape?

A. Propyne

B. Ethyne

C. But-2-yne

D. All of these

Answer: B



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8. Which of the following possesses only sp hybridized carbons?

A. Butyne

B. Buta-1,2-diene

C. Buta-1,3-diyne

D. Propadiene

Answer: C



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9. How many alkynes with the molecular formula C_5H_8 are possible?

A. 5

B. 4

C. 2

D. 3

Answer: D



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10. The IUPAC name of $CH_3CHC \equiv CH$ is

- A. 3-butyn-2-yl
- B. 1-methylprop-2-ynyl
- C. but-3-ynyl
- D. but-2-ynyl

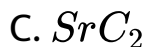
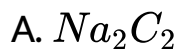
Answer: B



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Follow Up Test 2

1. Which of the following compounds on hydrolysis gives acetylene ?

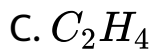
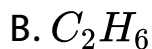


Answer: B



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2. Which of the following hydrocarbons is used for the major industrial synthesis of acetylene?



Answer: A



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3. 1,2-Dichloroethane is heated with KOH (1 mol) in ethanol. The major product formed is

A. ethylene glycol

B. acetylene

C. 2-chloroethanol

D. vinyl chloride

Answer: D



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4. Ethyne is formed when as aqueous solution of ____ is electrolyzed.

A. Sodium acetate

B. sodium succinate

C. sodium formate

D. sodium formate

Answer: C



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5. Ethyne is formed when when ____ is heated with silver powder.

A. CCl_4

B. $CHCl_3$

C. CH_2Cl_2

D. CH_3Cl

Answer: B



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6. Acetylide ion C_2^{2-} , possesses

A. two σ bonds one π bonds and one lone pair of electrons.

B. one σ bond, two π bonds and one lone pair of electrons.

C. one σ bond, two π bonds, and two lone pairs of electrons

D. three σ bonds, and two lone pairs of electrons

Answer: C



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Follow Up Test 3

1. Acetylene on reaction with 1 mol of HCl in the presence of mercuric chloride produces

A. ethylidene chloride

B. ethylene chloride

C. allyl chloride

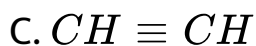
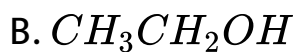
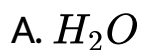
D. vinyl chloride

Answer: D



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2. Which of the following is the least acidic?

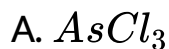


Answer: D



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3. Lewisite, a chemical weapon, is prepared by the reaction of acetylene with

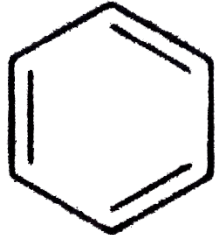


Answer: A

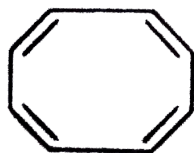


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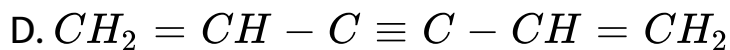
4. Acetylene polymerizes in the presence of $Ni(CN)_2$ under pressure to form mainly



A.



C.



Answer: C



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5. Acetylene $\xrightarrow[NH_4Cl]{CuCl}$ The product formed in the reaction

is

A. buta-1,3-diyne

B. butenyne

C. buta-1,3-diene

D. but-2-yne

Answer: B



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6. Acetylene is transported from one place to another in the form of its solution in acetone because

A. it is activated by acetone

B. it might polymerize into benzene

C. it might explode on a sudden shock

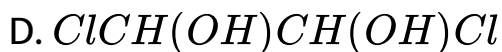
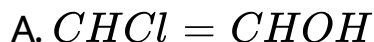
D. it might be oxidized to CO_2 and air

Answer: C



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7. When acetylene reacts with an excess of hypochlorous acid, the product formed is



Answer: B



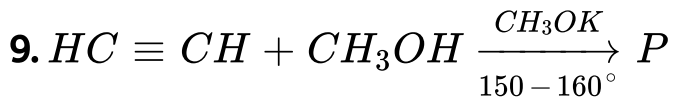
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8. When acetylene is passed into warm acetic acid (excess) in the presence of mercuric ions as catalyst, the product formed is

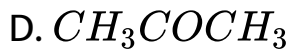
- A. ethyl acetate
- B. vinyl acetate
- C. acetic anhydride
- D. ethylidene diacetate

Answer: D

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Identify the product



Answer: A

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10. $HC \equiv Ch \xrightarrow[\text{unexcess}]{NaNH_2} I \xrightarrow[2.H_2O]{1.CH_2O} II$. Identify the final product.

- A. but-2-yne,4-dial
- B. prop-2-yne-1-ol
- C. but-2-yne-1,4-diol
- D. but-2-ene-1,4-diol

Answer: C

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11. Which of the following compounds on heating with zinc powder in alcohol finally gives ethyne?

A. 1,2,2,2-Tetrabromoethane

B. 1,1,2,2-Tetrabromoethane

C. 1,1-dibromoethane

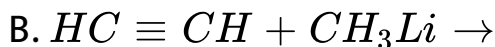
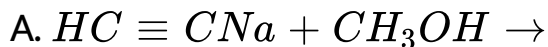
D. 1,2-Dibromoethane

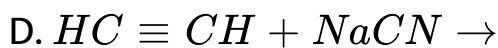
Answer: B



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12. Which of the reaction is not feasible?





Answer: D



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Follow Up Test 4

1. Which of the following hydrocarbons are most polar in nature?

A. Alkanes

B. Alkenes

C. Alkynes

D. All are non-polar

Answer: C



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2. What is the minimum number of C atoms required to have a carbon-carbon triple bond in a cyclic structure?

A. Eight

B. Seven

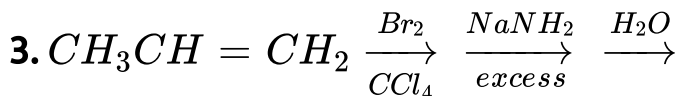
C. Six

D. Five

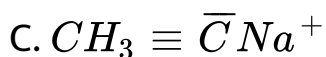
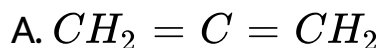
Answer: A



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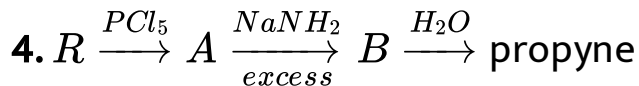


Identify the end product of the above sequence of reactions.

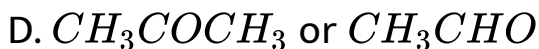
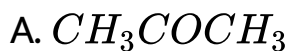


Answer: B

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Identify the reactant.



Answer: D

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5. 2,3-Dibromobutene $\xrightarrow{\text{Reagent}}$ but-2-yne Identify the reagent.

A. Zn

B. Mg

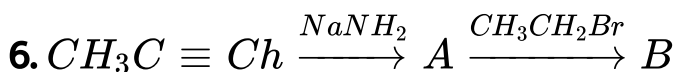
C. I^-

D. all of these

Answer: D



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Identify the product B.

A. pent-2-ene

B. pent-2-yne

C. pent-1-yne

D. pentane

Answer: B



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7. Sodium propynide reacts with 2-bromo-2-methylpropane The major product obtained is

A. propyne and 2-methylpropene

B. propyne and 2-methylpropane

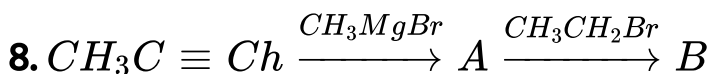
C. 4,4-dimethylpent-2-yne

D. no reaction takes place

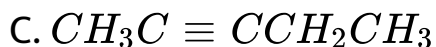
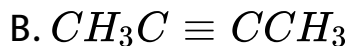
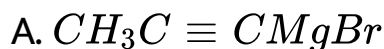
Answer: A



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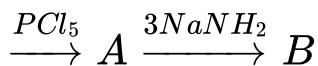
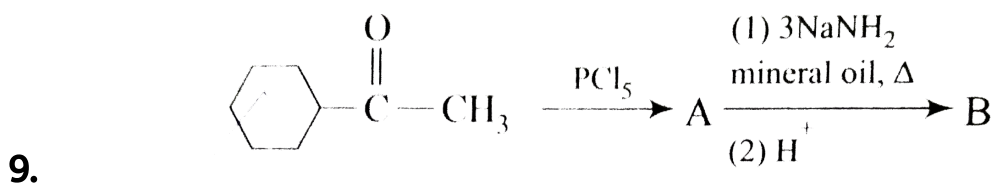


The final product B in the reaction sequence is

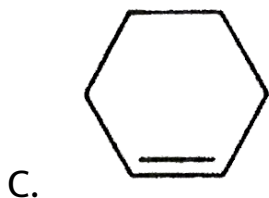
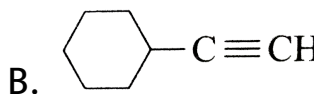
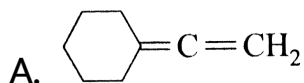


Answer: C

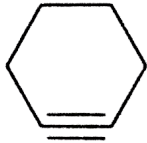
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The final product B of the reaction is



(4)



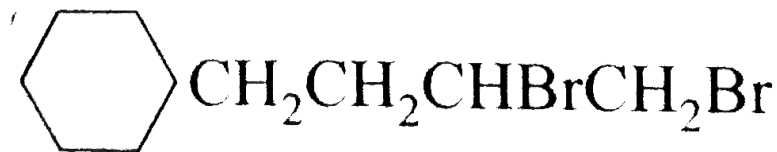
D.

Answer: B



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10. How many moles of sodamide are required to synthesize an alkyne from the following compound?



A. One mole

B. Two moles

C. Four moles

D. Three moles

Answer: D



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Follow Up Test 5

1. Which of the following catalysts or chemical reagents are employed for the syn addition of hydrogen to alkynes?

(i) Lindlar's catalyst

(ii) P-2 catalyst

(iii) B_2H_6

(iv) *DIBAL* – *H*

A. (i),(ii)

B. (i),(ii),(iii),(iv)

C. (i),(iii),(iv)

D. (i),(ii),(iii)

Answer: B



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2. Which of the following alkynes is not normally reduced to alkene by sodium in liquid ammonia?

A. pent-1-yne

B. pen-2-yne

C. but-2-yne

D. 4-methypent-2-yne

Answer: A



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3. Which of the catalysts should be used to hydrogenate but-2-yne into butane?

A. Pd

B. Ni

C. Pt

D. Any of these

Answer: D



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4. Which of the following is correct?

A. Alkynes are more reactive than alkenes toward catalytic hydrogenation.

B. the hydrogenation of alkynes is more exothermic than the hydrogenation of alkenes

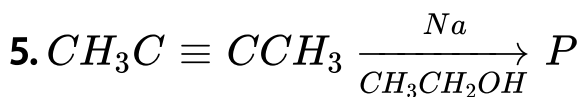
C. both alkynes and alkenes are equally reactive toward catalytic hydrogenation.

D. both (1) and (2)

Answer: D



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Identify the product.

A. cis-but-2-ene

B. trans-but-2-ene

C. an equimolar mixture of (1) and (2)

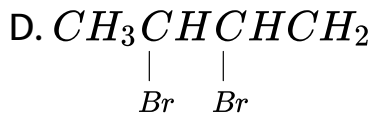
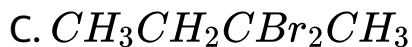
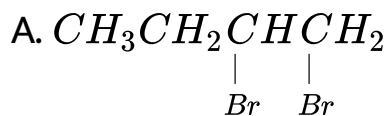
D. Unequal amounts of (1) and (2)

Answer: B



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6. When but-1-yne reacts with two equivalents of HBr , the major product is

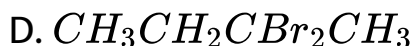
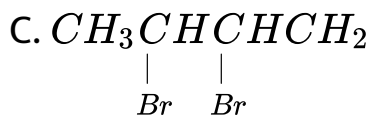
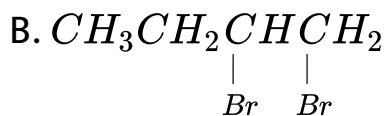
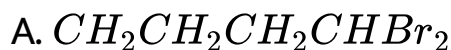


Answer: C



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7. When but-1-yne reacts with two equivalents of HBr , in the presence of a peroxide, the major product is



Answer: A



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8. Which of the following statements is correct?

A. Alkynes are more reactive than alkenes in electrophilic addition reaction but less reactive in nucleophilic addition reactions.

B. Alkynes are more reactive than alkenes in nucleophilic addition reactions but less reactive in electrophilic addition reactions.

C. Alkynes are more reactive than alkenes in both electrophilic and nucleophilic addition reactions.

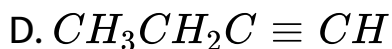
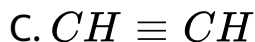
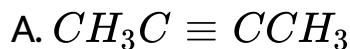
D. Alkynes are less reactive than alkenes in both electrophilic and nucleophilic addition reactions.

Answer: B



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9. Which of the following alkynes is insoluble in conc. H_2SO_4 ?

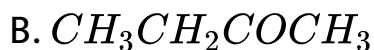
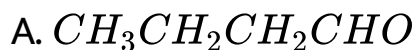


Answer: C



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10. The product (s) obtained by the oxymercuration ($HgSO_4 + aq. H_2SO_4$) of but-1-yne are



Answer: B



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11. Which of the following reagents would convert but-1-yne into but-2-yne?

A. ammoniacal $CuCl$

B. $\frac{NaNH_2}{NH_3(1)}$

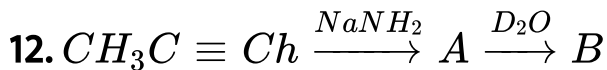
C. ammoniacal $AgNO_3$

D. Ethanolic KOH , heat

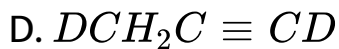
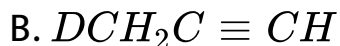
Answer: D



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Identify the product B.



Answer: C



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13. Which of the following alkynes will not react with ammoniacal $CuCl$?

A. but-1-yne

B. but-2-yne

C. propyne

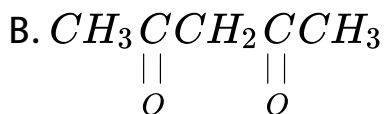
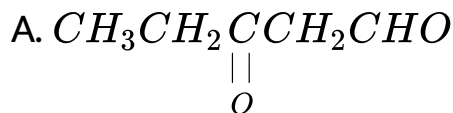
D. ethyne

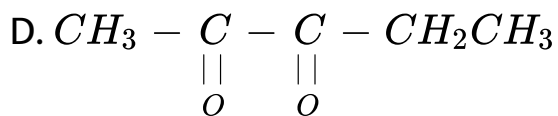
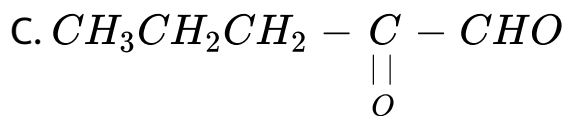
Answer: B



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14. Pent-2-yne will yield _____ on reductive ozonolysis.





Answer: D



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15. Hept-3-yne reacts with _____ to form a diketone

A. KMnO_4 under neutral conditions

B. alkaline KMnO_4 at higher temperature

C. acidic KMnO_4

D. all of these

Answer: A



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16. Like acetylene, the homologues of acetylene can also polymerize. Which of the following will polymerize to give hexamethyl benzene?

A. but-1-yne

B. propyne

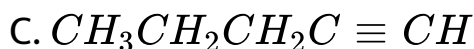
C. but-2-yne

D. hex-3-yne

Answer: C

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17. Which of the following alkynes will produce isobutyric acid and CO_2 on oxidation with hot concentrated alkaline $KMnO_4$?



Answer: B

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18. Which of the following reagents can distinguish between propene and propyne?

(i) Na (in hexane)

(ii) $Na^+ NH_2$ (in liquid NH_3)

(iii) $Ag(NH_3)_2^+ OH^-$

(iv) $Cu(NH_3)_2^+ OH^-$

A. (i),(ii),(iii),(iv)

B. (i),(ii)

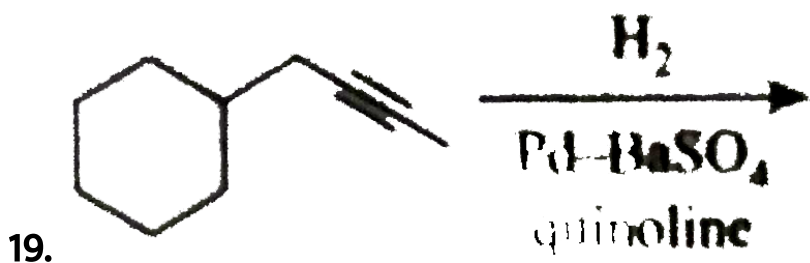
C. (iii),(iv)

D. (ii),(iii),(iv)

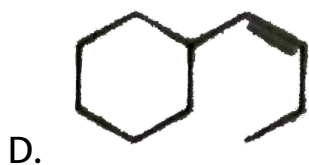
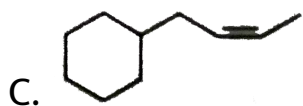
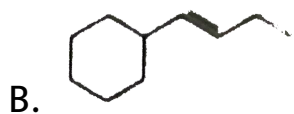
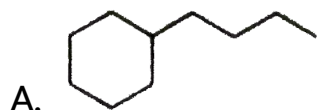
Answer: A



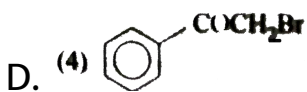
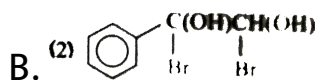
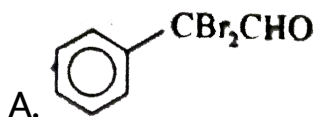
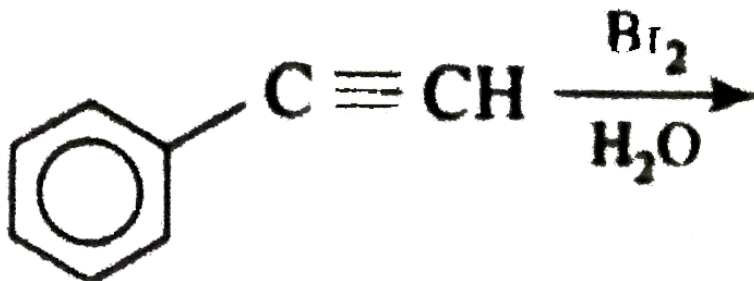
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Identify the product.



Answer: C



Answer: D

Question Bank

1. The carbon-carbon bond length in acetylene is

A. 120 pm

B. 139 pm

C. 154 pm

D. 134 pm

Answer: A



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2. The number of sigma (σ) and pi (π) bonds present in acetylene are _____ respectively.

A. 3 and 2

B. 4 and 2

C. 2 and 3

D. 2 and 4

Answer: A



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3. Which of the following molecules possess sp , sp^2 and sp^3 hybridized C atoms?

A. but-2-yne

B. buta-1,3-diene

C. buta-1,2-diene

D. propadiene

Answer: C



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4. How many alkynyl group are possible with the formula $C_3H_3^-$?

A. 2

B. 3

C. 4

D. 1

Answer: A



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5. The number of σ - and π -bond in 1-buten-3-yne is:

A. 6σ and 4π

B. 7σ and 3π

C. 5σ and 5π

D. 8σ and 2π

Answer: B



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6. Lime is heated with ____ at 2000° the product is treated with water to liberate ethyne.

A. charcoal

B. coke

C. graphite

D. diamond

Answer: B



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7. Acetylene is allowed to react with an excess of HCl in the presence of $HgCl_2$. The product formed is

- A. vinylchloride
- B. acetylene dichloride
- C. ethylene dichloride
- D. ethylidene dichloride

Answer: D



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8. Which of the dihalides undergo a double dehydrohalogenation to give an alkyne?

A. vic-dihalide

B. gem-dihalide

C. α, ω -dihalide

D. Both (1) and (2)

Answer: A



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9. Monosodium acetylide is treated with benzyl bromide.

The product formed is

A. dibenzyl acetylene

B. ethylbenzene

C. 3-phenylpropyne

D. phenylacetylene

Answer: D



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10. 1,2-dibromopropane is heated with one mole of alcoholic KOH. The reaction is expected to produce

A. 3-bromopropene

B. 2-bromopropene

C. 1-bromopropene

D. all of these

Answer: D



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11. 2,3-dibromobutane is treated with sodium amide (excess) in liquid ammonia. The main product is

A. but-1-yne

B. buta-1,2-diene

C. but-2-yne

D. buta-1,3-diene

Answer: C



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12. Stilbene ($C_6H_5-CH=CH-C_6H_5$) reacts with $\frac{Br_2}{Cl_4}$ and the resulting product is heated with an excess of alcoholic KOH. Identify the final product.

- A. Styrene
- B. Diphenylacetylene
- C. diphenylethene
- D. phenylacetylene

Answer: B

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13. $CH_3C \equiv CCH_3 \xrightarrow[\text{CaCO}_3 \text{ and } BaSO_4]{\frac{H_2}{Pd}} p$ Identify the product quinoline.

A. cis-But-2-ene

B. trans-But-2-ene

C. An equimolar mixture of (1) and (2)

D. unequal amounts of both (1) and (2)

Answer: A

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14. Which of the following reagents may be used to distinguish between but-1-yne and but-2-yne?

A. Ammoniacal CuCl

B. Conc. H_2SO_4

C. Br_2 in CCl_4

D. Dilute KMnO_4

Answer: A



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15. The total number of isomers possible for the formula

C_3H_4 is

A. 5

B. 3

C. 4

D. 2

Answer: B



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16. Chloroethene is treated with sodium amide in liquid ammonia. The major product is

A. acetylene

B. ethenamine

C. sodium ethynide

D. 2-chloroethenamine

Answer: C



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17. Al_4C_3 , Mg_2C_3 and CaC_2 are hydrolyzed separately.

The hydrocarbons formed are ____ respectively.

A. acetylene, methane, methylecetylene

B. methylecetylene, methane, acetylene

C. methanem, methylacetylene, acetylene

D. methylacetylene, acetylene, methane

Answer: C



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18. $CH \equiv CH \xrightarrow[Hg^{2+}]{CH_3CO_2H (2mol)} A \xrightarrow{Heat} B$ The final product in the reaction is

- A. acetic anhydride
- B. acetaldehyde
- C. ethylidene diacetate
- D. Both (1) and (2)

Answer: D



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19. Which of the following is least preferred to make higher alkynes from sodium acetylide?



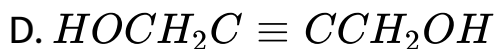
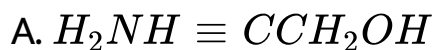
D. both (2) and (3)

Answer: C



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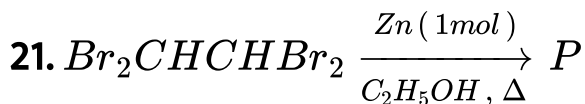
20. $HC \equiv Ch \xrightarrow[1mol]{NaNH_2} A \xrightarrow[(2) H_2O]{(1) H_2CO} B$ The final product in the sequence is



Answer: B



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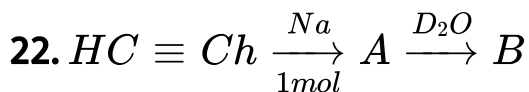


Identify the major product.

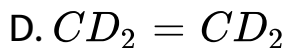
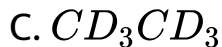
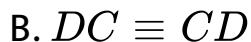
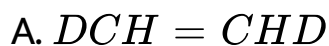
- A. ethyne
- B. 1,1,2-tribromoethene
- C. trans-1,2-dibromoethene
- D. cis-1,2-dibromoethene

Answer: C

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Identify the final product B.



Answer: B



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23. A hydrocarbon (A) reacts with sodium amide and then with ethylbromide to produce another hydrocarbon (B) which on ozonolysis by oxidative method yields propanoic acid only. The hydrocarbons (A) and (B) are, respectively.

A. but-1-yne and hex-3-yne

B. but-1-yne and hex-3-ene

C. propyne and hex-3-yne

D. propyne and pent-2-yne

Answer: A



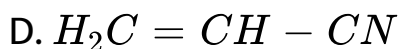
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24. $HC \equiv Ch \xrightarrow[NaCN]{HCN} p$ Identify the product p

A. $NCC \equiv CCN$

B. $(NC)_2C = C(CN)_2$

C. $HC \equiv C - CN$



Answer: D



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25. propyne undergoes cycloaddition reaction in the presence of Ziegler-Natta catalyst to produce

A. 1,2,4-trimethylbenzene

B. 1,3,5-trimethylbenzene

C. 1,2,3-trimethylbenzene

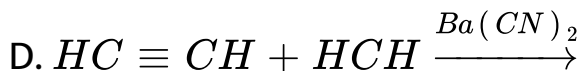
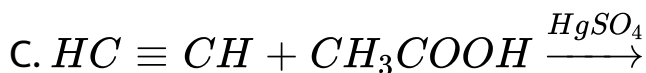
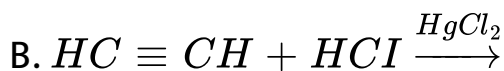
D. benzene

Answer: B



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26. Orlon is a synthetic fiber obtained by the polymerization of a monomer. The monomer can be prepared by the reaction



Answer: D



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27. The total number of compounds that have the same general formula as the alkyne of four C atoms is

A. 5

B. 4

C. 6

D. 7

Answer: D



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28. When methane gas is heated at $1500^{\circ}C$ for a very short time in open atmosphere(fraction of a second), it forms

A. methane

B. ethane

C. ethene

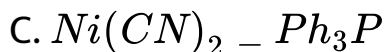
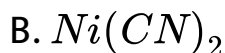
D. benzene

Answer: A



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29. Which of the following acts as a good catalyst in the process of trimerization of acetylene into benzene?



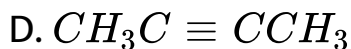
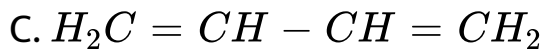
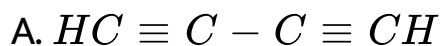
D. All of these are good catalysts

Answer: C



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30. Acetylene $\xrightarrow[Cu^{2+}]{O_2}$ The product formed in the reaction is

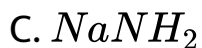


Answer: A



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31. Acetylene does not react with

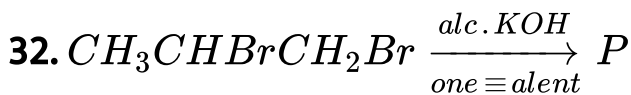


D. NaH

Answer: B



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identify the main product.



Answer: D

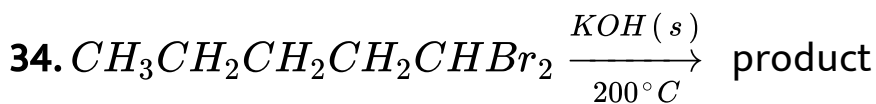
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33. Which of the following is not a practical method for synthesizing alkynes ?

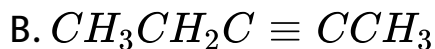
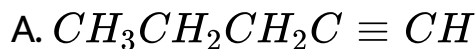
- A. Dehydrohalogenation of gem-dihalides
- B. Dehydrohalogenation of vic-dihalides
- C. dehalogenation of tetrahalides
- D. none of these

Answer: C

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Identify the product.

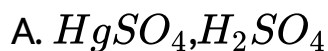


Answer: B



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35. Which of the following reagents would convert but-2-yne to but-1-yne?



B. Ethanolic KOH, heat

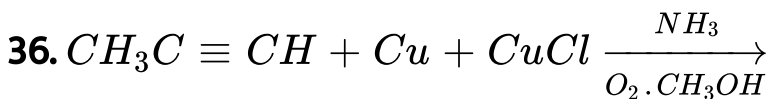
C. $NaNH_2$ in mineral oil, heat

D. Ammoniacal $AgNO_3$

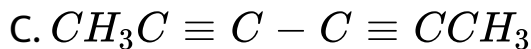
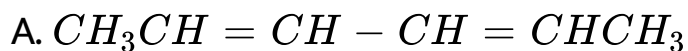
Answer: C



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identify the product.



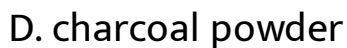
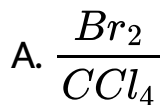
Answer: C



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Archives

1. Ethylene can be separated from acetylene by passing the mixture through

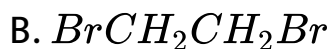
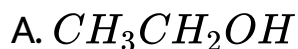


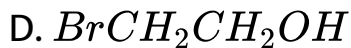
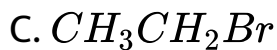
Answer: C



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2. From which one of the following can both ethylene and acetylene be prepared in a single step reaction?



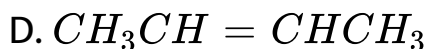


Answer: B



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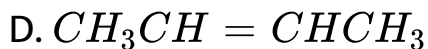
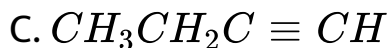
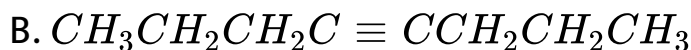
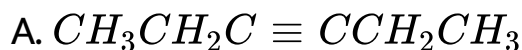
3. The treatment of CH_3MgX with $CH \equiv CH$ produces



Answer: A

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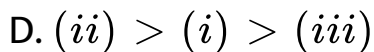
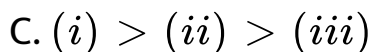
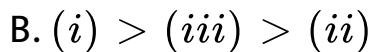
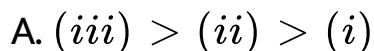
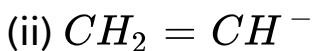
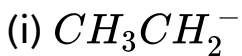
4. The hydrocarbon which can react with sodium in liquid ammonia is



Answer: C

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5. Base strength of

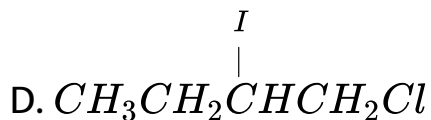
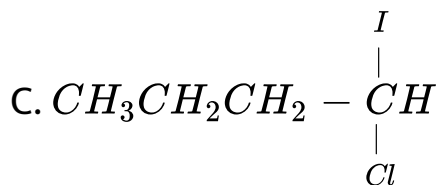
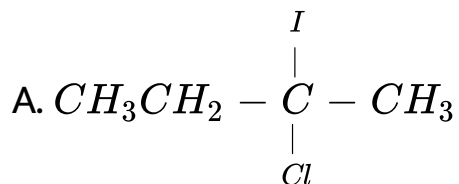
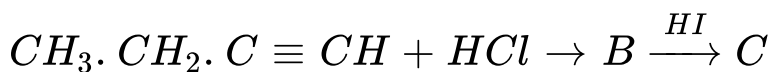


Answer: C



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6. The product C is

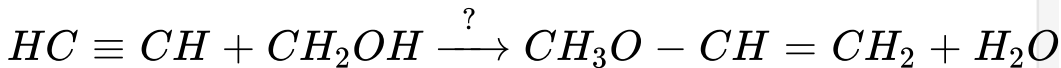


Answer: A

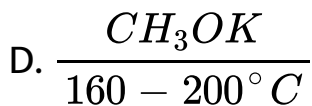
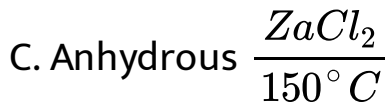
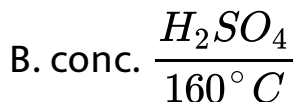
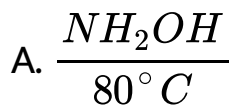


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7. Under which of the following conditions does the reaction



the place?

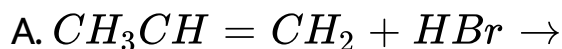


Answer: D



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8. Which of the following reactions will yield 2,2-dibromo propane?



Answer: B



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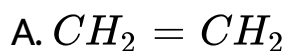
9. The reaction of acetylene and propyne with $HgSO_4$ in the presence of H_2SO_4 produces respectively.

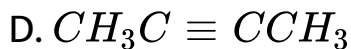
- A. acetone and acetaldehyde
- B. acetaldehyde and acetone
- C. propionaldehyde and acetone
- D. acetone and propionaldehyde

Answer: B

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10. An organic compound decolorizes Br_2 water and also gives red ppt. with Cu_2Cl_2 solution the compound is





Answer: C



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11. Ethene and ethyne can be distinguished by

A. Br_2 water

B. $KMnO_4$ solution

C. cuprous chloride solution

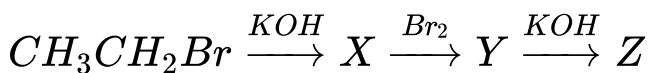
D. any of the above

Answer: C

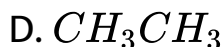
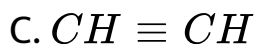
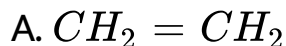


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12. In the following sequence of reactions



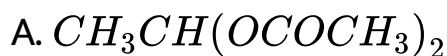
Z is



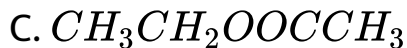
Answer: C

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13. $HC \equiv CH$ reacts with acetic acid in the presence of Hg^{2g+} ions to give



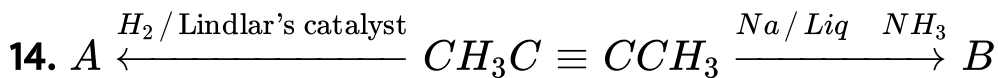
B. |



D. none of these

Answer: A

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A and B, respectively, are

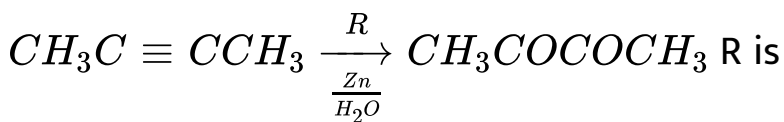
- A. cis, trans-but-2-ene
- B. both trans-but-2-ene
- C. trans, cis-but-2-ene
- D. both cis-but-2-ene

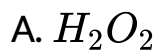
Answer: A



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15. In the reaction



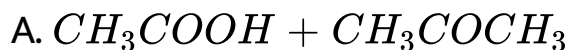
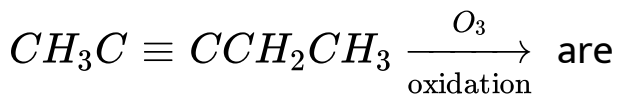


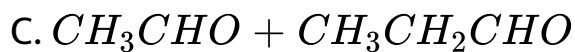
Answer: C



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16. The products of the following reactions





Answer: B



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17. Propyne when passed through a hot iron tube at $400^\circ C$ produces

A. benzene

B. methylbenzene

C. dimethylbenzene

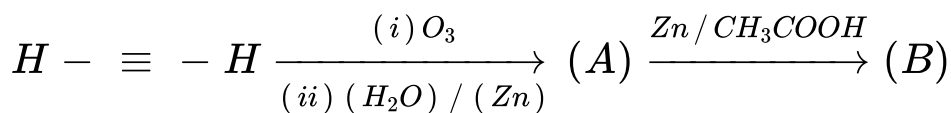
D. trimethylbenzene

Answer: D

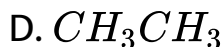
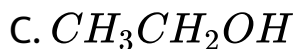
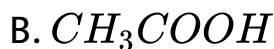
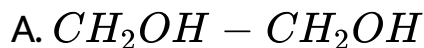


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18.



Compound (B):



Answer: A



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19. Which of these will not react with acetylene?

A. $NaOH$

B. Ammoniacal $AgNO_3$

C. Na

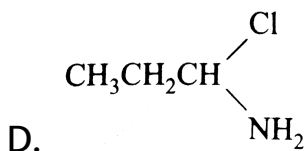
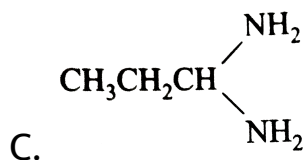
D. HCl

Answer: A



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20. When $CH_3CH_2CHCl_2$ is treated with $NaNH_2$, the product formed is

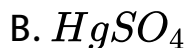
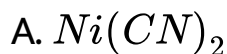


Answer: B



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21. Acetylene polymerizes in the presence of $Ni(CN)_2$ under pressure to form mainly



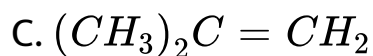
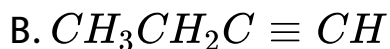
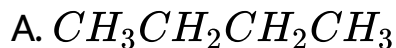
Answer: A



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22. But-2-yne heated with $NaNH_2$ in mineral oil and then treated with water. Which of the following

compounds is formed finally?



Answer: B



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23. The hydrocarbon which decolorizes alkaline $KMnO_4$ solution but does not give any precipitate with ammoniacal silver nitrate solution is

A. benzene

B. acetylene

C. propyne

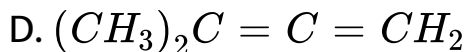
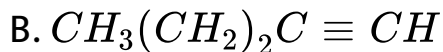
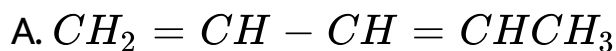
D. but-2-yne

Answer: D



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24. A compound (C_5H_8) reacts with ammoniacal $AgNO_3$ to give a white precipitate and reacts with excess of $KMnO_4$ solution to give $(CH_3)_2CH - COOH$. The compound is



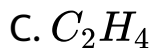
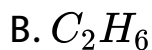
Answer: C



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25. From which of the following hydrocarbons may hydrogen be displaced by a strongly electropositive metal?





Answer: D



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26. A gaseous mixture of ethane, ethene, and ethyne is passed into an ammoniacal $AgNO_3$ solution. The gas that escapes from the solution is expected to contain

A. ethene

B. ethane and ethyne

C. ethene and ethyne

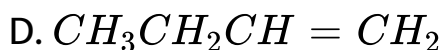
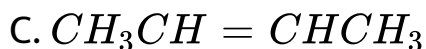
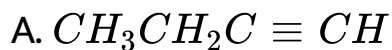
D. ethane and ethene

Answer: D



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27. Which of the hydrocarbons is reduced by sodium and liquid ammonia?



Answer: B



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28. Which of the following reagents can distinguish but-1-yne from but-2-yne, but-2-ene and butane?

A. dilute $KMnO_4$

B. Br_2 in CCl_4

C. Br_2 in water

D. Ammoniacal $AgNO_3$

Answer: D



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29. Which of the following hydrocarbons will react with NaNH_2 to form a sodium salt?

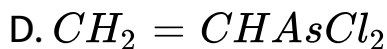
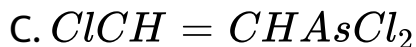
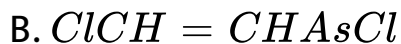
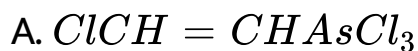
- A. Benzene
- B. Ethane
- C. Ethene
- D. Acetylene

Answer: A



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30. Structural formula for lewisite is



Answer: C



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31. When pent-2-yne is treated with dilute H_2SO_4 and $HgSO_4$ the product formed is

A. pentan-1-ol

B. pentan-2-ol

C. pentan-2-one

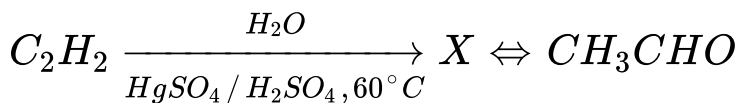
D. pentan-3-one

Answer: C



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32. In the following reaction

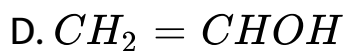


What is X?

A. CH_3CH_2OH

B. $CH_3OCH_3CH_3CH_2CHO$

C. $CH_2 = CHOH$

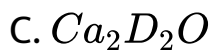
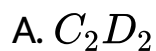


Answer: D



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33. What is formed when calcium carbide reacts with heavy water?



Answer: A



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34. Tetrabromoethane on treatment with Zn gives

A. ethyl bromide

B. ethane

C. ethene

D. ethyne

Answer: D



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35. On heating C_2H_2 to red hot the compound formed is

A. ethylene glycol

B. benzene

C. ethane

D. methane

Answer: B



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36. An unknown compound A has a molecular formula C_4H_6 . When A is treated with excess to Br_2 a new

substance B with formula $C_4H_6Br_4$ is formed. A forms a white precipitate with ammoniacal silver nitrate solution A may

A. but-1-yne

B. but-2-yne

C. but-1-ene

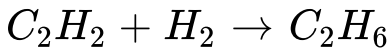
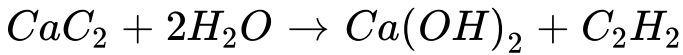
D. but-2-ene

Answer: A



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37. The formulation of polyethene from calcium carbide takes place as follows:



The amount of polythene obtained from 64 kg of CaC_2 is

A. 7 kg

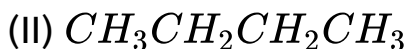
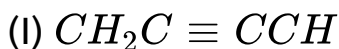
B. 14 kg

C. 21 kg

D. 28 kg

Answer: D

38. Which of the most suitable reagent among the following to distinguish compound (III) from the rest of the compounds?



A. bromine in carbon tetrachloride

B. bromine in acetic acid solution

C. Alc. $KNnO_4$

D. Ammoniacal silver nitrate

Answer: D



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39. Acetylene gives

- A. white precipitate with ammoniacal $AgNO_3$ and red precipitate with ammonical $Cu(NO_3)_2$
- B. white precipitate with ammoniacal $AgNO_3$ and red precipitate with ammoniacal Cu_2Cl_2
- C. white precipitate with both
- D. red precipitate with both

Answer: B



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40. Chloroprene is used in making

A. synthetic rubber

B. plastic

C. petrol

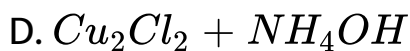
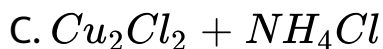
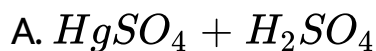
D. all of these

Answer: A



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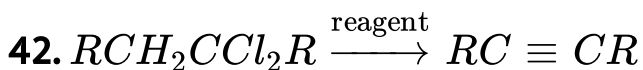
41. Catalyst used in the dimerization of acetylene to prepare chloroprene is



Answer: C



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The reagent used is

A. Na

B. $\frac{HCl}{H_2O}$

C. KOH in C_2H_5OH

D. $\frac{Zn}{alcohol}$

Answer: C



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