



**NEXT MEDIA**

(1) How many pi and sigma orbital are in the compound  $\text{H}_2\text{C}=\text{C}=\text{CH}_2$

- (A) 6 sigma and 2 pi
- (B) 4 sigma and 4 pi
- (C) 8 sigma and 4 pi

Hybridization - 2017/2018 - 1

**6 sigma and 2 pi**

^ Hide Answer

 Explanation

(2) Which of the following has the shortest carbon – carbon bond length

- (A)  $\text{CH}_2=\text{CH}_2$
- (B)  $\text{CH}_3\text{CH}_3$
- (C)  $\text{CH}=\text{CH}$
- (D)  $\text{C}_4\text{H}_{10}$

Hydrocarbons and General Nomenclature - 2017/2018 - 2

**$\text{CH}=\text{CH}$**

^ Hide Answer

 Explanation

(3) Which of the following will decolourize bromine water in carbon tetra chloride

- (A) 1, 2-dimethyl cyclopropane
- (B) cyclopropane
- (C) 1,2-dimethyl cyclobutane
- (D) cyclohexane

Alkanes - 2017/2018 - 3

**1, 2-dimethyl cyclopropane**

^ Hide Answer



Explanation

(4) Which of the following compounds do not have cis-trans isomerism

- (A)  $(\text{CH}_3)_2\text{C}=\text{CHCH}_3$
- (B)  $\text{CH}_3\text{CH}=\text{CHCH}_2\text{CH}_3$
- (C)  $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}_2\text{CH}_3$
- (D)  $\text{CH}_3\text{CH}=\text{CHCH}_3$

Isomerism - 2017/2018 - 4

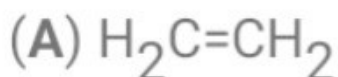
**$(\text{CH}_3)_2\text{C}=\text{CHCH}_3$**

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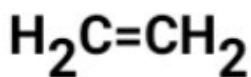


Explanation

(5) Which of the following is not an electrophile



Electrophiles and Nucleophiles - 2017/2018 - 5



^ Hide Answer



Explanation

(6) What product are obtained from oxidation of 2-hexene with warm  $\text{KMnO}_4$

(A) acetate and butanone

(B) acetaldehyde and butanone

(C) acetaldehyde and butanal

(D) Acetate and butanoate

Alkenes - 2017/2018 - 6

**acetaldehyde and butanal**

^ Hide Answer



Explanation

(7) Which of the following has banana flavor

- (A) ethyl formate
- (B) pentyl ethanoate
- (C) 3-ethyl ethanoate

Esters - 2017/2018 - 7

**pentyl ethanoate**

^ Hide Answer



Explanation

(8) The ester with pineapple flavor is

- (A) ethyl formate
- (B) pentyl ethanoate
- (C) 3-methyl ethanoate
- (D) ethyl butanoate

Esters - 2017/2018 - 8

**ethyl butanoate**

^ Hide Answer



Explanation

(9) Basic hydrolysis of esters is known as

- (A) saponification
- (B) acidification
- (C) esterification

Esters - 2017/2018 - 9

**saponification**

^ Hide Answer



Explanation

(10) Which of the following acid derivatives is most stable

- (A) acid chlorides
- (B) esters
- (C) anhydrides
- (D) amides

Alkanoic acids - 2017/2018 - 10

**amides**

^ Hide Answer



Explanation

(11) Which of these is not affected by the lone pair of electron on an amine nitrogen

- (A) basicity
- (B) melting point
- (C) solubility
- (D) hydrogen bond formation

Amines - 2017/2018 - 11

**melting point**

^ Hide Answer



Explanation

(12) What is the product of the reaction between primary amines and acid chloride

- (A) an amine
- (B) an ester
- (C) an amide
- (D) a secondary amine

Amines - 2017/2018 - 12

**an amide**

^ Hide Answer



Explanation

(13) Which of the following is least soluble in water

- (A) ethylamine
- (B) methylamine
- (C) propylamine
- (D) cyclohexylamine

Amines - 2017/2018 - 13

**cyclohexylamine**

^ Hide Answer

 Explanation

(14) Which of the following is a reagent in Gabriels amine synthesis

- (A) acyl or aryl halide
- (B) hydroxylamine
- (C) phthalimide
- (D) sodium azide

Amines - 2017/2018 - 14

**phthalimide**

^ Hide Answer

 Explanation



(15) Which converts methyl bromide to ethylamine

(A)  $\text{NaCN}$ ,  $\text{LiAlH}_3$ ,  $\text{H}_2\text{O}$

(B)  $\text{NaNO}_3$ ,  $\text{HCl}$

(C) large excess  $\text{NH}_3$

Amines - 2017/2018 - 15

**$\text{NaCN}$ ,  $\text{LiAlH}_3$ ,  $\text{H}_2\text{O}$**

^ Hide Answer



Explanation

(16) The molecular formular of a compound with molecular weight 62.07 and which contains 9.75% H, 38.7%C and 51.55% O is

(A)  $\text{C}_2\text{H}_6\text{O}_2$

(B)  $\text{C}_4\text{H}_{12}\text{O}_4$

(C)  $\text{C}_6\text{H}_{18}\text{O}_5$

Empirical and Molecular formular - 2017/2018 - 16

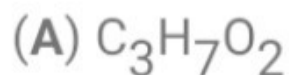
**$\text{C}_2\text{H}_6\text{O}_2$**

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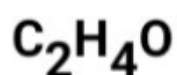


Explanation

(17) When 0.956g of an organic compound was burned, 1.91g of  $\text{CO}_2$  and 0.782g of water was produced. The empirical formula is



Empirical and Molecular formula - 2017/2018 - 17



^ Hide Answer

 Explanation

(18) How many carbon atoms are contained in undecane

(A) 10

(B) 11

(C) 12

(D) 13

Alkanes - 2017/2018 - 18

**11**

^ Hide Answer

 Explanation

(19) A sample of methane weighing 9.67mg produced 26.53mg of  $\text{CO}_2$  and 21.56mg of  $\text{H}_2\text{O}$  what is the % composition of carbon

- (A) 68%
- (B) 74.9%
- (C) 78%
- (D) 47.9%

Empirical and Molecular formulae - 2017/2018 - 19

**74.9%**

^ Hide Answer

 Explanation

(20) Give the schematic name for the compound  $\text{CH}_3(\text{CH}_2)_7\text{CH}_3$

- (A) iso nonane
- (B) n- nonane
- (C) bis nonane
- (D) t-nonane

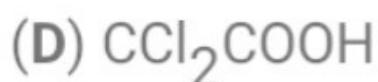
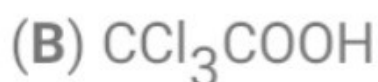
Hydrocarbons and General Nomenclature - 2017/2018 - 20

**n- nonane**

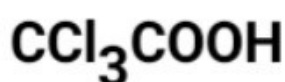
^ Hide Answer

 Explanation

(21) The structural formula of trichloroacetic acid is



Isomerism - 2017/2018 - 21



^ Hide Answer

 Explanation

(22) How many structural isomers are in this compound  $\text{C}_4\text{H}_{10}\text{O}$

(A) 6

(B) 7

(C) 8

Isomerism - 2017/2018 - 22

7

^ Hide Answer

 Explanation

(23) The molecular formula  $\text{CHCl}_3$  is called

- (A) formyl chloride
- (B) methyl chloride
- (C) ethanoyl chloride

Empirical and Molecular formula - 2017/2018 - 23

**formyl chloride**

^ Hide Answer



Explanation

(24) The following are various ways of drawing structural formula of an organic molecule except

- (A) displayed formula
- (B) 3D-structural formula
- (C) skeletal formula
- (D) semi-structural formula.

Hydrocarbons and General Nomenclature - 2017/2018 - 24

**semi-structural formula.**

^ Hide Answer



Explanation

(25) A reaction in which a carboxylic acid reacts with a base to form a salt and water is called

- (A) saponification
- (B) neutralization
- (C) esterification
- (D) hydrolysis

**saponification**

Hide Answer



Explanation

Alkanoic acids - 2017/2018 - 25

(26) Which of these is a secondary amine?

- (A)  $\text{CH}_3\text{CH}_2\text{N}(\text{CH}_3\text{CH}_2)\text{CH}_3\text{CH}_2$
- (B)  $\text{CH}_3\text{CH}_2\text{NHCH}_3\text{CH}_2$
- (C)  $\text{CH}_3\text{CH}_2\text{NH}_2$
- (D)  $\text{CH}_3\text{CH}_2\text{N}$

Amines - 2017/2018 - 26

**$\text{CH}_3\text{CH}_2\text{NHCH}_3\text{CH}_2$**

Hide Answer



Explanation

(27) Which of these has the highest boiling point

- (A)  $\text{CH}_3\text{CH}_2\text{COOH}$
- (B)  $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$
- (C)  $\text{CH}_3(\text{CH}_2)_5\text{COOH}$
- (D)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$

Alkanoic acids - 2017/2018 - 27

**$\text{CH}_3(\text{CH}_2)_5\text{COOH}$**

^ Hide Answer



Explanation

(28) All of the following will react with acid chloride to yield substituted amides EXCEPT

- (A)  $\text{CH}_3\text{NH}_2$
- (B)  $\text{CH}_3(\text{CH}_2)_5\text{NH}_2$
- (C)  $\text{CH}_3\text{N}(\text{CH}_3)\text{CH}_3$
- (D)  $\text{CH}_3\text{CH}_2\text{NHCH}_3$

Amines - 2017/2018 - 28

**$\text{CH}_3\text{N}(\text{CH}_3)\text{CH}_3$**

^ Hide Answer



Explanation

**(29)** The following will release nitrogen on reaction with nitrous oxide except

- (A) Ethylamine
- (B) Diethylamine
- (C) methylamine

Amines - 2017/2018 - 29

**Diethylamine**

^ Hide Answer

 Explanation

**(30)** Many amines in the liquid state have odours resembling that of

- (A) onion
- (B) garlic
- (C) rotten fish

Amines - 2017/2018 - 30

**rotten fish**

^ Hide Answer

 Explanation



**(31)** The boiling points of amines are lower than those of alcohols of similar molecular mass because

- (A) amines do not contain oxygen atoms
- (B) amines cannot hydrogen bond to each others
- (C) N-H hydrogen bonds are weaker than O-H hydrogen bonds
- (D) amines do not contain hydrogen

Amines - 2017/2018 - 31

**N-H hydrogen bonds are weaker than O-H hydrogen bonds**

^ Hide Answer



Explanation

**(32)** The process of converting one ester to another is called

- (A) Esterification
- (B) Transesterification
- (C) Saponification
- (D) Hydrolysis

Esters - 2017/2018 - 32

**Transesterification**

^ Hide Answer



Explanation

(33) Give the name of the alcohol that will react with methyl propanoate to yield butyl propanoate in the presence of HCl

- (A) butanol
- (B) n-propanol
- (C) methanol
- (D) n-pentanol

Alkanols - 2017/2018 - 33

**butanol**

^ Hide Answer



Explanation

(34) A reversible process has the forward reaction as esterification the backward reaction is

- (A) saponification
- (B) transesterification
- (C) decomposition
- (D) hydrolysis

Esters - 2017/2018 - 34

**hydrolysis**

^ Hide Answer



Explanation

**(35)** These emit pale fumes of HCl when exposed to air due to reaction with moisture

- (A) carboxylic acid
- (B) acid chlorides
- (C) acid anhydrides
- (D) amides

Acid Halides - 2017/2018 - 35

**acid chlorides**

^ Hide Answer



Explanation

**(36)** Acid anhydrides have higher boiling points than the acids due to

- (A) their large sizes
- (B) covalent bonds
- (C) hydrogen bonds

Acid Anhydrides - 2017/2018 - 36

**hydrogen bonds**

^ Hide Answer



Explanation

(37) These homologues are identified by reaction with sodium bicarbonate,  $\text{NaHCO}_3$

- (A) amides
- (B) amines
- (C) carboxylic acid

Alkanoic acids - 2017/2018 - 37

**carboxylic acid**

^ Hide Answer

 Explanation

(38) What orbitals is used for the formation of C-H bond in ethane

- (A)  $\text{C}(\text{sp}) \text{H}(\text{s})$
- (B)  $\text{C}(\text{sp}^2) \text{H}(\text{s})$
- (C)  $\text{C}(\text{sp}^3) \text{H}(\text{s})$
- (D)  $\text{C}(\text{sp}^2) \text{H}(\text{p})$

Hybridization - 2017/2018 - 38

**$\text{C}(\text{sp}^3) \text{H}(\text{s})$**

^ Hide Answer

 Explanation

(39) What is the product of peroxide catalysed hydroboration of 1-methylcyclohexene

- (A) 4-bromo-1-methylcyclohexane
- (B) 2-bromo-1-methylcyclohexane
- (C) 1-bromo-1-cyclohexane
- (D) 5-bromo-1-methylcyclohexane

Alkenes - 2017/2018 - 39

**2-bromo-1-methylcyclohexane**

^ Hide Answer

 Explanation

(40) Which atomic orbital overlaps to form carbon – carbon triple bond

- (A)  $s+s$ ;  $sp+sp$ ;  $p+p$
- (B)  $sp^2+sp^2$ ;  $p+p$
- (C)  $sp+sp$ ;  $p+p$ ;  $p+p$
- (D)  $sp+sp$ ;  $sp+sp$ ;  $p+p$

Hybridization - 2017/2018 - 40

**$sp+sp$ ;  $p+p$ ;  $p+p$**

^ Hide Answer

 Explanation

**(41)** Which of the following is most acidic

- (A) 1-butyne
- (B) 2-butyne
- (C) 1-butene
- (D) 2-butene

Alkyl/Functional Group - 2017/2018 - 41

**1-butyne**

^ Hide Answer



Explanation

**(42)** Which of the following will react with sodamide

- (A) cyclodecyne
- (B) 2-pentyne
- (C) 2-butyne
- (D) 1-hexyne

Alkynes - 2017/2018 - 42

**1-hexyne**

^ Hide Answer



Explanation

(43) Predict the product of 1-pentyne with excess  $\text{Br}_2$

- (A) 1,1-dibromo-1-pentene
- (B) 1,2-dibromo-1-pentene
- (C) 1,1,2,2-tetrabromopentane

Alkynes - 2017/2018 - 43

**1,1,2,2-tetrabromopentane**

^ Hide Answer



Explanation

(44) A compound has a molecular formula  $\text{C}_4\text{H}_6$ , when treated with excess hydrogen and a catalyst gave a compound  $\text{C}_4\text{H}_{10}$  when treated with ammoniacal silver nitrate a precipitate was formed. The compound is

- (A) 1,3-butadiene
- (B) 2-butyne
- (C) 1-butyne

Alkynes - 2017/2018 - 44

**1-butyne**

^ Hide Answer



Explanation

(45) Which reagent is a good nucleophile

- (A)  $\text{NH}_3$
- (B)  $\text{HBr}$
- (C)  $\text{Br}_2$
- (D)  $\text{BH}_3$

Electrophiles and Nucleophiles - 2017/2018 - 45

**$\text{NH}_3$**

^ Hide Answer

 Explanation

(46) Compound A  $\text{C}_4\text{H}_8\text{Cl}_2$  undergoes hydrolysis with aqueous  $\text{KOH}$  to give compound B. Compound B undergoes iodoform reaction to an oxime but does not react with tollens reagent. What is compound B

- (A) 2,2-dichlorobutane
- (B) hexanone
- (C) 2-butanone
- (D) 3-pentanone

Reagents - 2017/2018 - 46

**2-butanone**

^ Hide Answer

 Explanation



**(47)** What type of orbitals are involved in C-O bonds in alcohols

(A)  $C(sp^2)$ ,  $O(sp^2)$

(B)  $C(sp)$ ,  $O(sp^2)$

(C)  $C(sp^2)$ ,  $O(sp)$

(D)  $C(sp^3)$ ,  $O(sp^3)$

Hybridization - 2017/2018 - 47

**$C(sp^3)$ ,  $O(sp^3)$**

^ Hide Answer

 Explanation

**(48)** Which of the following oxidation does one need to use pyridinium chlorochromate

(A) methanol to formic acid

(B) Ethanol to acetic acid

(C) ethanol to acetaldehyde

(D) acetaldehyde to acetic acid

Alkanols - 2017/2018 - 48

**ethanol to acetaldehyde**

^ Hide Answer

 Explanation

**(49)** Which of the following constitutes lucas reagent

(A)  $\text{NaCl}$ ,  $\text{HCl}$ ,  $\text{CuCl}_2$

(B)  $\text{HCl}$ ,  $\text{ZnCl}_2$

(C)  $\text{HCl}$ ,  $\text{SnCl}_2$

Reagents - 2017/2018 - 49

**$\text{HCl}$ ,  $\text{ZnCl}_2$**

^ Hide Answer



Explanation

**(50)** Which of the following have the highest boiling point

(A)  $\text{CH}_3\text{OCH}_3$

(B)  $\text{CH}_3\text{CH}_2\text{OH}$

(C)  $\text{CH}_3\text{CH}_2\text{CH}_3$

Alkyl/Functional Group - 2017/2018 - 50

**$\text{CH}_3\text{CH}_2\text{OH}$**

^ Hide Answer



Explanation

(51) Which of the following has the lowest solubility in water

- (A) pentanol
- (B) methanol
- (C) butanol

Alkanols - 2017/2018 - 51

**pentanol**

^ Hide Answer



Explanation

(52) Suppose you want to prepare 3-phenyl-3-pentanol from an acid derivative, which acid derivative would you use

- (A) phenyl acetic acid anhydride
- (B) benzoic acid
- (C) phenyl acetic acid chloride
- (D) methyl benzoate

Esters - 2017/2018 - 52

**methyl benzoate**

^ Hide Answer



Explanation

(53) Which product is formed from the catalytic hydrogenation of 2,2-dimethyl-4-pentanal

- (A) 2,2-dimethyl pentanol
- (B) 2,2-dimethyl-3-pentanol
- (C) 2,2-dimethyl-4-pentanol
- (D) none of the above

Aldehyde and Ketones - 2017/2018 - 53

**2,2-dimethyl pentanol**

^ Hide Answer



Explanation

(54) Which compound can be reduced easily with sodium borohydride

- (A) amides
- (B) esters
- (C) aldehydes and ketones
- (D) alkenes

Aldehyde and Ketones - 2017/2018 - 54

**aldehydes and ketones**

^ Hide Answer



Explanation

(55) Which of the following is a good method for preparing aldehydes

- (A) Jones reagent and 1° alcohols
- (B) Jones reagent and 2° alcohols
- (C) PCC and 1° alcohols
- (D)  $\text{H}_2\text{SO}_4$  and 1° alcohols

Aldehyde and Ketones - 2017/2018 - 55

**PCC and 1° alcohols**

^ Hide Answer



Explanation

(56) Which of the following aldehydes used alone will undergo aldol condensation

- (A) formaldehyde
- (B) butanal
- (C) benzaldehyde

Aldehyde and Ketones - 2017/2018 - 56

**butanal**

^ Hide Answer



Explanation

(57) An unknown compound on ozonolysis gave acetaldehyde and benzophenone. What is the unknown

- (A) 1,2-diphenyl propene
- (B) 1,1-diphenyl propene
- (C) 2-phenyl-2-hexene

Alkenes - 2017/2018 - 57

**1,1-diphenyl propene**

^ Hide Answer



Explanation

(58) What is the function of acid catalyst in the esterification of carboxylic acid

- (A) protonation of the carbonyl oxygen
- (B) protonation of the OH group
- (C) protonation of the carbonyl carbon

Esters - 2017/2018 - 58

**protonation of the carbonyl oxygen**

^ Hide Answer



Explanation

(59) Which of the following reagent will not reduce the carboxylic acid to primary alcohol under mild condition

- (A) BH in ether
- (B) NaBH<sub>4</sub> in ethanol
- (C) H<sub>2</sub>O<sub>2</sub> in water
- (D) LiAlH<sub>4</sub> in ether

Alkanoic acids - 2017/2018 - 59

**H<sub>2</sub>O<sub>2</sub> in water**

^ Hide Answer

 Explanation

(60) Which of the following will react with tollens reagent

- (A) formic acid
- (B) acetic acid
- (C) propanoic acid
- (D) butanoic acid

Alkanoic acids - 2017/2018 - 60

**formic acid**

^ Hide Answer

 Explanation