

# 11 • Chemistry of Carbon

## PRACTICE TEST

- A molecule named propene has the formula:
  - $C_2H_2$
  - $C_3H_6$
  - $C_4H_8$
  - $C_3H_4$
  - $C_3H_2$

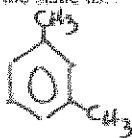
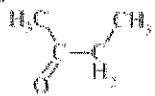
$C_n H_{2n}$
- What is the name of a molecule with the formula  $C_5H_{10}$ ?
  - pentane
  - hexene
  - butyne
  - butene
  - pentene

$C_n H_{2n}$
- A molecule that fits the pattern,  $C_n H_{2n+2}$ , is a(n)
  - alkane
  - alkene
  - cyclic compound
  - alkyne
  - need more info
- The general formula of the alkyne series is:
  - $C_n H_{2n}$
  - $C_n H_{2n+2}$
  - $C_n H_{2n-2}$
  - $C_n H_{2n+6}$
- How many  $\pi$  bonds are present in propyne?
  - 1
  - 2
  - 3
  - 4

$C \equiv C$
- The hydrocarbon series that has a double bond between carbon atoms is the
  - alkane family
  - alkene family
  - alkyne family
  - alkadiene family
- Organic chemistry is the study of
  - compounds of carbon
  - nonmetals
  - once-living things
  - compounds produced by living things

(HISTORIC IDEA)

- In octene, the hybridization(s) of carbon is(are):
  - $sp$  and  $sp^2$
  - $sp^2$  only
  - $sp^3$  and  $sp^2$
  - $sp^3$  only
  - $sp$ ,  $sp^2$  and  $sp^3$

$-C-C-C-C=C-C-C-C-$
- The properties of carboxylic acids include all of the following *except*:
  - they can be neutralized by bases *True*
  - the molecule has some polarity *True*
  - they ionize completely in water solution
  - they react with alcohols to form esters *True*
- Dimethylbenzene is also known as xylene. 1,3-dimethylbenzene would be the same as...
  - ortho-xylene
  - meta-xylene
  - para-xylene
  - none of these
- The compound
 

is classified as a

  - alcohol
  - ester
  - acid
  - ketone
  - aldehyde
- What hybridization is utilized by the oxygen atom in the carbonyl group above?
  - $sp$
  - $sp^3$
  - $sp^2$

$-C=O:$

$sn = 3$   
 $sp^2$

13. An amine is characterized by what functional group?

- a) ROH                      c) RCOOR'  
 b) RCOOH                 d) **RNH<sub>2</sub>**

14. Compounds with the same molecular formula but different structural formulas are called

- a) isotopes                      d) anomalies  
 b) variations                 c) **isomers**  
 e) conformations

15. The least chemically reactive of the hydrocarbon families are the

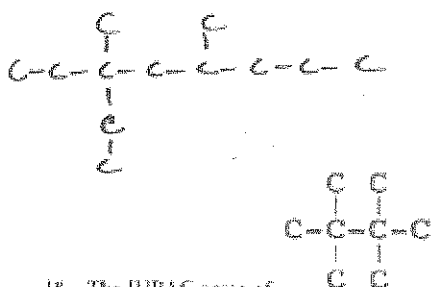
- a) **alkanes**                      c) alkyenes  
 b) alkenes                      d) alkynes
- no π bonds with exposed electrons!*

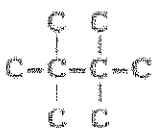
16. The compound represented by



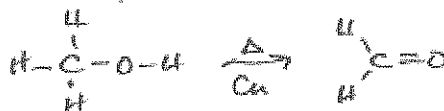
- is a(n)  
 a) **acid**                      d) aldehyde  
 b) ester                      e) amide  
 c) ketone

17. Draw the structural formula of 3,5-dimethyl-3-ethylheptane

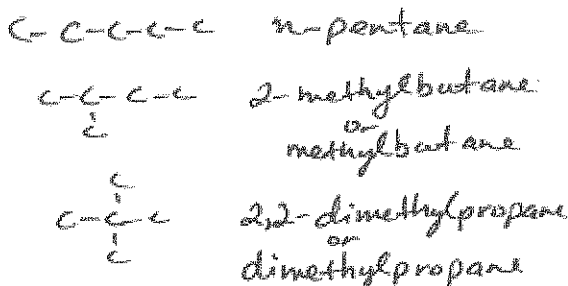


18. The IUPAC name of  is **2,2,3,3-tetramethylbutane**

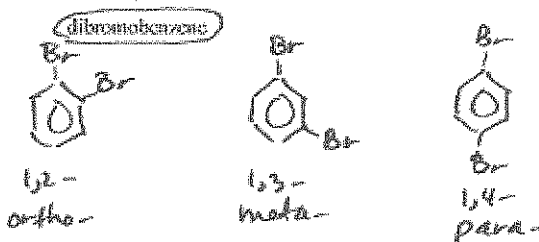
19. The molecule CH<sub>3</sub>OH is gently oxidized. Draw the product.



20. Draw and name the three isomers of pentane.



23. Draw and name the three isomers of



24. Draw the polymer formed from the monomer vinyl chloride, CH<sub>2</sub>CHCl.

