

This practice test is meant to suggest the types of questions and content to be covered. It is not meant to be all inclusive of either. Please let me know of any errors that you find.

MULTIPLE CHOICE.

- Of the following, which has the highest boiling point?
a) C_4H_{10} b) C_3H_8 c) C_2H_6 d) CH_4
- The fuel for a backyard grill is
a) methane b) ethane c) propane d) butane
- The bond angles in ethane are all _____ degrees.
a) 90 b) 109.5 c) 120 d) 180
- The combustion of fossil fuels has led to an increase in the concentration of what compound in the atmosphere?
a) CF_2Cl_2 b) ethane c) propane d) CO_2
- The increase in the CO_2 content of the atmosphere poses a potential climatic problem due to
a) the ozone hole b) the greenhouse effect c) *El Nino* d) *La Nina*
- Separation of different alkanes, such as in the production of gasoline, is accomplished by
a) absorption b) adsorption c) chromatography d) distillation
- Vaseline*® is a mixture of solid and liquid hydrocarbons. Its usefulness derives from the fact that alkanes are fairly
a) inert and nonpolar
b) inert and polar
c) reactive and nonpolar
d) reactive and polar
- The bonding in organic compounds is best described as
a) covalent b) ionic c) metallic
- Organic compounds are composed mostly of
a) C, H, O and N b) Si and H c) C, Si, H, and O d) all the nonmetals
- Double bonds are composed
a) sigma (σ) bonds only b) pi (π) bonds only c) sigma (σ) and pi (π) bonds

For each pair of the following pairs, tell whether the structures shown are

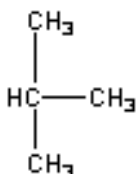
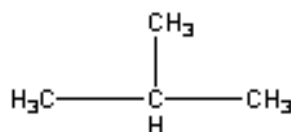
A) different drawings for the same compound

B) isomers

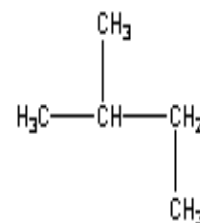
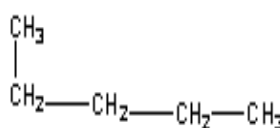
C) different compounds that are not isomers

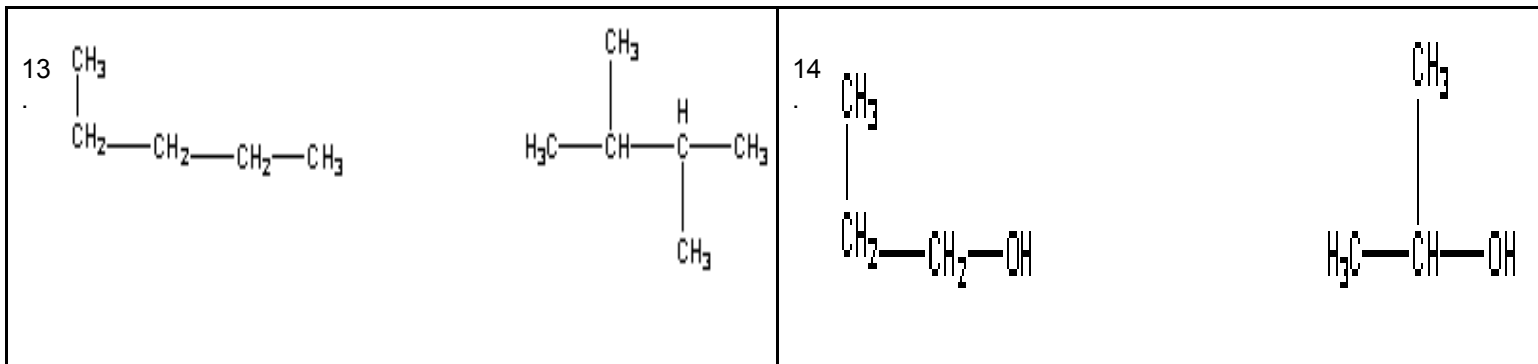
use the letters **A**, **B**, or **C** as specified above for your answer.

11.

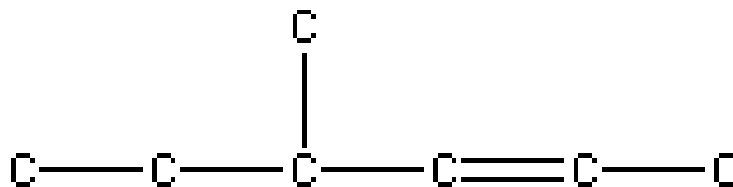


12.





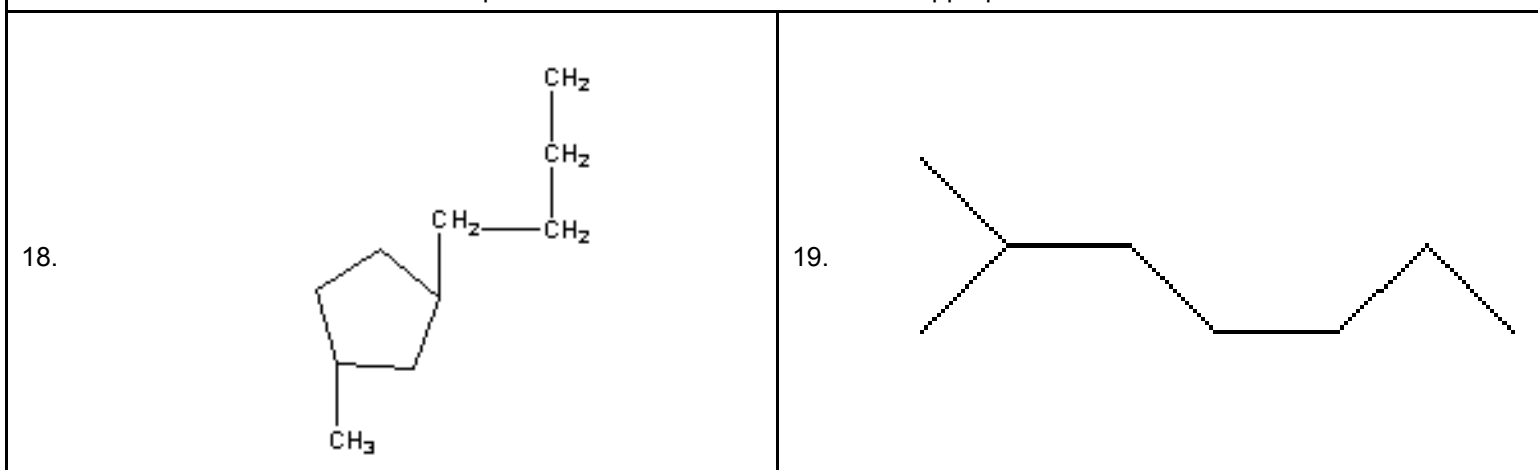
15. For the structure
- below draw in ALL missing hydrogens
 - label each carbon as 1°, 2°, 3°, or 4°
 - what is its IUPAC name?



For each of the following, draw a condensed or very condensed structural formula, including all hydrogens.

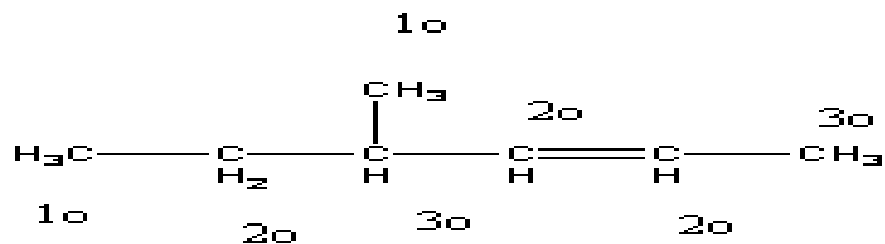
Name	condensed or very condensed structural formula
16. 2,3-dibromo-4-methylpentane	
17. <i>Cis</i> -1-ethyl-3-methylcyclohexane	

Give correct IUPAC names for the compounds below. Use *cis*- or *trans*- as appropriate



ANSWER KEY

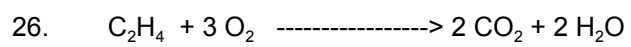
1. a) C₄H₁₀
2. c) propane
3. b) 109.5
4. d) CO₂
5. b) the greenhouse effect
6. d) distillation
7. a) inert and nonpolar
8. a) covalent
9. a) C, H, O and N
10. c) sigma (σ) and pi (π) bonds
11. A) different drawings for the same compound
12. A) isomers
13. C) different compounds that are not isomers
14. B) isomers
15. 4-methyl-2-hexene (please note that the last CH₃ group is 1° and not 3°-sorry!)



<p>16. 2,3-dibromo-4-methylpentane</p>	
<p>17. <i>Cis</i>-1-ethyl-3-methylcyclohexane</p>	

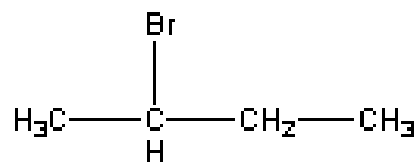
- | | |
|--|------------|
| <ol style="list-style-type: none"> 18. <i>trans</i>-1-butyl-3-methylcyclopentane 19. 2-methylheptane 20. 2,3-dibromo-4-methylpentane 21. 2-bromo-3-ethyl-2-fluoroheptane 22. <i>trans</i>-2-pentene 23. 2-bromo-3-ethyl-1,1-dimethylcyclopropane | <p>24.</p> |
|--|------------|

25. b) substitution and d) halogenation



27. e) combustion

28.



29. a) addition d) halogenation

