***Alkanes Worksheet***

1. Answer the following.

a. What is the general formula for an alkane? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. If a saturated alkane had 15 carbon atoms in it, how many hydrogens would there be? \_\_\_\_\_\_

2. Draw all of the possible structure of following types of hydrocarbons using 4 carbon atoms:

a. alkane

b. cycloalkane

3. Give the molecular formula, the structural formula, the condensed structural formula, and the skeletal formula (line drawing) for pentane.

|  |  |
| --- | --- |
| *Molecular formula:* |  |
| *Structural formula:* |  |
| *Condensed structural formula:* |  |
| *Skeletal formula (line diagram):* |  |

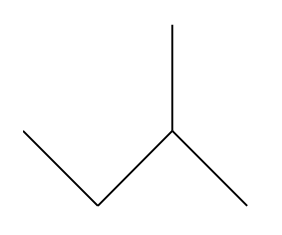
5. Give the molecular formula, the structural formula, the condensed structural formula, and the skeletal formula for 4-ethyl-2,3-dimethylheptane.

|  |  |
| --- | --- |
| *Molecular formula:* |  |
| *Structural formula:* |  |
| *Condensed structural formula:* |  |
| *Skeletal formula (line diagram):* |  |

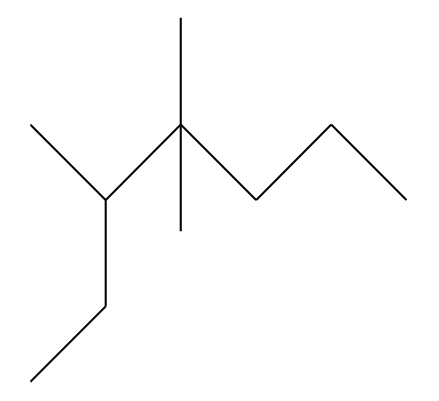
6. Give the molecular formula, the structural formula, the condensed structural formula, and the skeletal formula for 3,3-diethyloctane.

|  |  |
| --- | --- |
| *Molecular formula:* |  |
| *Structural formula:* |  |
| *Condensed structural formula:* |  |
| *Skeletal formula (line diagram):* |  |

7. What is the IUPAC name for the following structure?

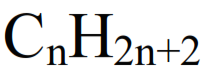
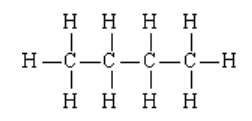
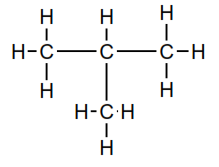
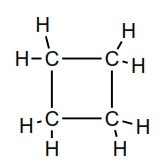
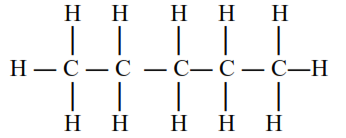
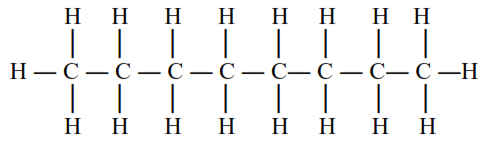
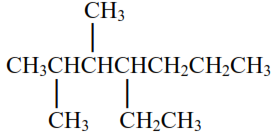
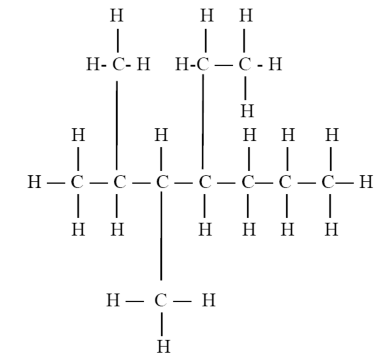
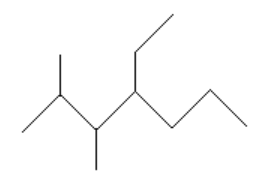
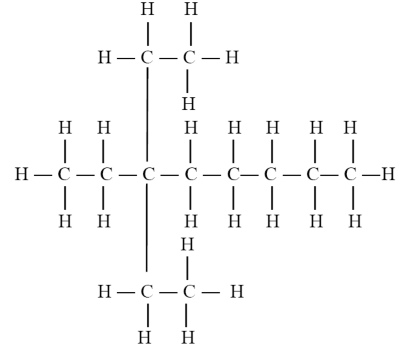
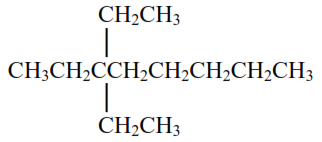
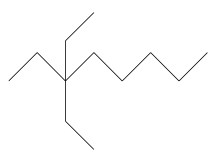


8. What is the IUPAC name for the following structure?



9. Draw and name four isomers of octane.

***Solutions:***

1. a) b)
2. a)  b)
3.  
4.    
5.   
6.    
7. 
8. 

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |