**2.1.1 Exercise 3 – ISOMERISM IN ALKANES**

1. Draw the molecular, empirical, structural, skeletal and displayed formulae for hexane:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| molecular | empirical | structural | skeletal | displayed |
|  |  |  |  |  |

2. State the meaning of the terms:

|  |  |
| --- | --- |
| Molecular formula |  |
| Empirical formula |  |
| Structural Formula |  |
| Skeletal Formula |  |
| Displayed Formula |  |

3. Hexane is a saturated hydrocarbon and an aliphatic alkane

What is meant by the terms:

|  |  |
| --- | --- |
| Saturated |  |
| Hydrocarbon |  |
| Aliphatic |  |
| Alkane |  |

4. Hexane has four isomers.

a) What are isomers?

|  |  |
| --- | --- |
| Isomers |  |

b) Draw the skeletal formulae of the four isomers of hexane and name them:

|  |  |
| --- | --- |
| Skeletal Formula | Name |
|  |  |
|  |  |
|  |  |
|  |  |

5. What is the general formula for alkanes?

6. Name the following compounds:

|  |  |  |
| --- | --- | --- |
| A  http://upload.wikimedia.org/wikipedia/commons/5/57/2-methyl-heptane.png  2-methylheptane | B  http://upload.wikimedia.org/wikipedia/commons/3/3b/2,5-dimethylhexane.png | C  File:2-2-dimethyl-hexane.png |
| D  http://wtt-pro.nist.gov/wtt-pro/image.png?cmp=3.3-diethylpentane | E  http://wtt-pro.nist.gov/wtt-pro/image.png?cmp=2.3.4-trimethylpentane | F  http://wtt-pro.nist.gov/wtt-pro/image.png?cmp=3-ethylheptane |
| G  http://upload.wikimedia.org/wikipedia/commons/thumb/3/38/2,3-dimethylheptane.svg/512px-2,3-dimethylheptane.svg.png | H  http://wtt-pro.nist.gov/wtt-pro/image.png?cmp=2.2.5-trimethylhexane | I  http://wtt-pro.nist.gov/wtt-pro/image.png?cmp=2.2.3.3-tetramethylpentane |

1. Which three molecules are isomers of A?
2. Draw the structural formula of E
3. Draw the displayed formula of D
4. What is the molecular formula of D?
5. What is the empirical formula of C?
6. Draw the skeletal formula of the unbranched isomer of I
7. State which of A – I are aliphatic saturated hydrocarbons