1. These three molecules include an alkane, an alkene and an alcohol.
2. State which molecules belong to which group.

Write your answer underneath each molecular structure.

|  |  |  |
| --- | --- | --- |
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| Answer: Alkene: ethene. | Answer: Alkane: methane. | Answer: Alcohol: ethanol. |

1. Name each of the substances in part a).

Write your answer in the same boxes.

Answer: See answers above.

1. Indicate the alcohol functional group on one of the molecules shown.

Answer: See diagram of ethanol in which the O-H (hydroxyl) group is circled.

1. Use the molecular structure of ethanol to write down the chemical formula for ethanol.

Answer: C2H5OH, or C2H6O.



1. Janice and Matt set up this equipment then waited for one week.

A chemical reaction takes place in which new substances are made.

1. Complete the word equation for this reaction:

Glucose 🡪 ethanol + carbon dioxide

1. What is the name given to the type of reaction taking place?

Answer: Fermentation.

1. Explain why yeast is used in the experiment.

Answer: Yeast contains an enzyme that makes the fermentation happen at a faster rate.

Janice and Matt then add the mixture from the conical flask to the round-bottom flask in a different experiment.

1. What is the purpose of this new experiment?

Answer: To separate the ethanol from the aqueous solution.

1. Explain how this experiment works.

Source: Royal Society of Chemistry

Answer: Ethanol has a lower boiling point than water, so is able to form a vapour that can be removed and condensed.

Source: Royal Society of Chemistry

Source: Royal Society of Chemistry

1. What is the name of this technique or experiment?

Answer: Fractional distillation.

1. Janice and Matt add a small sample of the ethanol they have made and add it to a crucible.

They add a lighted splint to the ethanol and notice that it catches fire.

Complete the equation to show what happens when ethanol burns:

C2H5OH + 3O2 🡪 2CO2 + 3H2O

1. Ravi carries out an experiment with a mixture of ethanol dissolved in water.

He leaves the ethanol open to the air for two weeks.

He notices that a very slow chemical reaction takes place.

He removes a few drops of his new mixture and adds some universal indicator solution.

He notices that the indicator turns orange.

1. What type of substance has formed?

Answer: A weak acid.

1. What is the name of the new organic product formed?

Answer: Ethanoic acid.

1. State the name of the chemical substance that reacts with ethanol in this reaction.

Answer: Oxygen.

1. What type of reaction has taken place?

Answer: Oxidation.

1. Complete the diagram to show the structure of the new organic product made.

