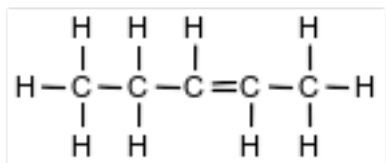


## Table P Organic Prefixes

1 Given the formula representing a compound:



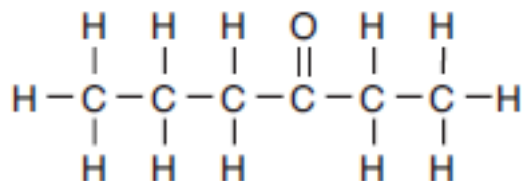
What is a chemical name of this compound?

- (1) 2-pentene                      (3) 3-pentene  
 (2) 2-pentyne                    (4) 3-pentyne

2 What is the name of the compound with the formula  $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$ ?

- (1) 1-propanol                    (3) propanal  
 (2) 1-propanamine                (4) propanamide

3 Given the formula representing a compound:



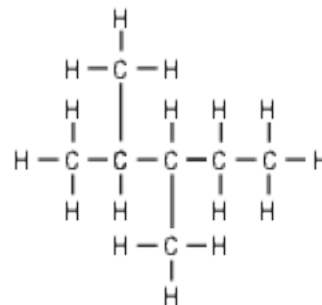
What is an IUPAC name for this compound?

- (1) ethyl propanoate              (3) 3-hexanone  
 (2) propyl ethanoate              (4) 4-hexanone

4 What is the chemical name for the compound  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$ ?

- (1) butane                              (3) decane  
 (2) butene                              (4) decene

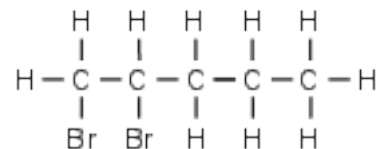
5 Given the formula representing a compound:



What is a chemical name of this compound?

- (1) 2,3,3-trimethylbutane  
 (2) 2-methyl-2-ethylbutane  
 (3) 2,3-dimethylpentane  
 (4) 2,3-ethylpentane

6 Given the formula representing a compound:



What is a chemical name of this compound?

- (1) 1,1-dibromopentane    (3) 1,2-dibromopentane  
 (2) 2,2-dibromopentane    (4) 4,5-dibromopentane

Base your answers to questions 7 on the information below and on your knowledge of chemistry.

Crude oil, primarily a mixture of hydrocarbons, is separated into useful components in a fractionating tower. At the bottom of the tower, the crude oil is heated to about 400°C. The gases formed rise and cool. Most of the gases condense and are collected as liquid fractions. The table below shows the temperature ranges for collecting various hydrocarbon fractions.

Hydrocarbon Fractions Collected

Number of Carbon Atoms per Molecule	Temperature Range (°C)
1-4	below 40
5-12	40-200
12-16	200-300
16-20	300-370
>20	above 370

7 State the temperature range for the fraction collected that contains octane molecules.

Base your answers to questions 8 on the information below and on your knowledge of chemistry.

Water, H<sub>2</sub>O, and hexane, C<sub>6</sub>H<sub>14</sub>, are commonly used as laboratory solvents because they have different physical properties and are able to dissolve different types of solutes. Some physical properties of water and hexane are listed on the table below.

Physical Properties of H<sub>2</sub>O and C<sub>6</sub>H<sub>14</sub>

Solvent	Boiling Point (°C)	Melting Point (°C)	Vapor Pressure at 69°C (kPa)
H <sub>2</sub> O	100.	0.	?
C <sub>6</sub> H <sub>14</sub>	69	-95	101.3

8 Explain, in terms of molecular formulas and structural formulas, why 2,2-dimethylbutane is an isomer of hexane. [1]

## Answer Keys

1 1

2 2

3 3

4 1

5 3

6 3

7 Allow 1 credit for 40°C to 200°C. Significant figures do not need to be shown.

8 Allow 1 credit. Acceptable responses include, but are not limited to:

- The hexane and the 2,2-dimethylhexane have the same molecular formula but have different structural formulas.
- Both molecules have the same number of C atoms and the same number of H atoms but have a different arrangement of atoms.
- Both compounds are C<sub>6</sub>H<sub>14</sub>, but have different structures.