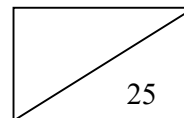


Name: _____ () Class: _____ Date: _____

An Introduction to Organic Chemistry AFL TEST



Multiple-Choice Questions (10 marks)

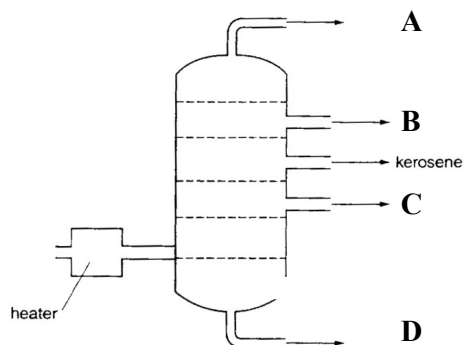
1. Which statement about the members of a homologous series is **not** true?
- A They have the same functional group.
 - B They undergo similar chemical reactions.
 - C They have the same molecular mass.
 - D There is a gradual change in their boiling points down the series. ()
2. Petroleum can be separated by fractional distillation because its constituents _____.
- A are immiscible
 - B have different densities
 - C are highly flammable
 - D have different boiling points ()
3. Which of the following fractions of petroleum has the highest boiling point?
- A Diesel
 - B Kerosene
 - C Bitumen
 - D Petroleum gas ()
4. The table below shows the boiling point ranges of four fractions collected from the fractional distillation of petroleum. Which fraction contains the smallest molecules?
- | Fraction | Boiling point range/°C |
|----------|------------------------|
| A | 40–75 |
| B | 150–240 |
| C | 220–250 |
| D | 300–350 |
- ()

5. Which of the following are arranged in order of increasing boiling points?

- A Kerosene, petrol, diesel, bitumen
- B Bitumen, diesel, kerosene, petrol
- C Petrol, diesel, kerosene, bitumen
- D Petrol, kerosene, diesel, bitumen

()

6. At which outlet of the fractionating column below is the fuel used in gas cookers collected?



()

7. Which of these fractions has the most number of carbon atoms per molecule?

- A Naphtha
- B Petroleum gas
- C Petrol
- D Lubricating oil

()

8. The main constituent of natural gas is _____.

- A butane
- B ethane
- C methane
- D petroleum gas

()

9. Some substances obtained from the distillation of petroleum are listed in order of decreasing boiling points.

bitumen, **P**, diesel, **Q**, naphtha, **R**, petroleum gas

Which row correctly identifies **P**, **Q** and **R**?

	P	Q	R
A	lubricating oil	kerosene	petrol
B	lubricating oil	petrol	kerosene
C	petrol	kerosene	lubricating oil
D	petrol	lubricating oil	kerosene

()

10. Which of the following statements is true?

- A** Petroleum can be separated by simple distillation.
B Natural gas is a renewable source of energy.
C Biodiesel is an alternative fuel to petroleum.
D Biogas is produced when organic matter decays in air. ()

Structured Questions (15 marks)

11. The structures of three compounds are shown below. Complete the table. [6]

Compound	Structure	Functional group	Name of compound
X	$ \begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H} - \text{C} = \text{C} - \text{H} \end{array} $		
Y	$ \begin{array}{c} \text{H} \quad \text{H} \quad \text{O} \\ \quad \quad \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{O} - \text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array} $		
Z	$ \begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} - \text{O} - \text{H} \\ \\ \text{H} \end{array} $		

12. (a) Which petroleum fraction

- (i)** is used as a chemical feedstock; [1]
(ii) is the most volatile? [1]

- (b) Describe how petroleum is separated into useful fractions by fractional distillation. [4]

13. The table below shows the approximate composition of petroleum from various sources expressed in percentage by mass.

Source	Naphtha	Petrol/Paraffin	Diesel/Lubricating oil
Middle East	20	34	46
Nigeria	24	38	38
North Africa	30	38	32
Venezuela	2	18	80

Suggest reasons why the price per barrel of oil is greatest for North African petroleum and least for Venezuelan petroleum. [3]
