

HW5_after LFL and UFL 2

Due Oct 17 at 12:59pm	Points 15	Questions 7	Time Limit None
Allowed Attempts 3			

Take the Quiz Again

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	583 minutes	15 out of 15

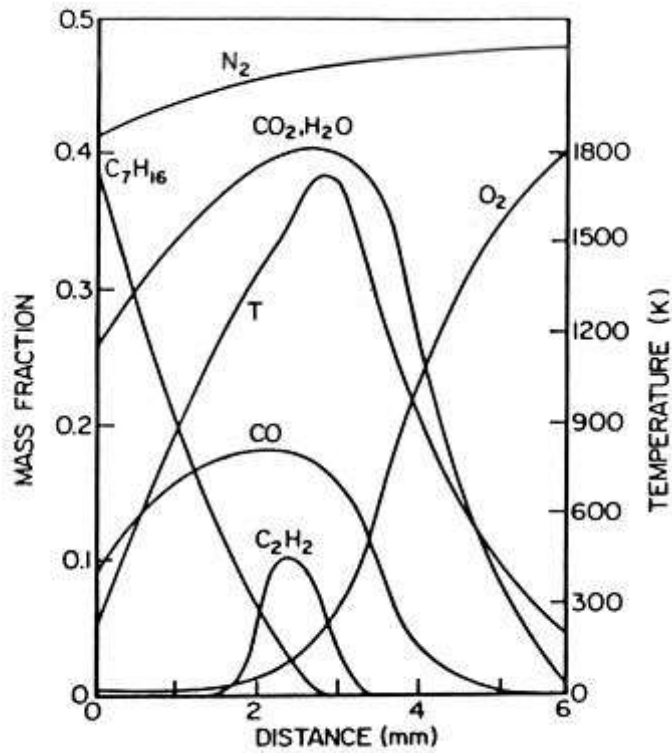
⚠️ Correct answers are hidden.

Score for this attempt: **15** out of 15
Submitted Oct 16 at 9:35pm
This attempt took 583 minutes.

Question 1

1 / 1 pts

What is the chemical formula of the fuel in the figure below?



☒ C7H16

☐ CO

☐ C2H2

☐ CO2

Question 2

5 / 5 pts

Calculate the flame height from the outlet if;

- The laminar burning velocity of the fuel is 0.5 m/s,
- The fuel-air mixture flows through 2 cm diameter outlet, and
- The volume flow rate of the fuel is 0.4L/s.

The Lateral cone surface area (excluding the base)= $\pi r \sqrt{h^2 + r^2}$ with r(radius) and h(height).



☒ 0.023 m

☐ 0.017 m

☐ 0.019 m

☐ 0.021 m

Question 3

1 / 1 pts

Pentane (C_5H_{12})'s LFL at 25°C is 1.4 vol%. What is the value of x at LFL? Round your answer to the first decimal place.

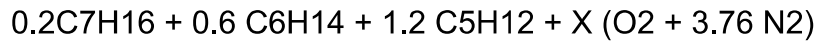
$C_5H_{12} + x (O_2 + 3.76 N_2)$

14.8

Question 4**1 / 1 pts**

Below is the fuel mixture consisting of 0.2 moles of heptane (C_7H_{16}), 0.6 moles of hexane (C_6H_{14}), and 1.2 moles of pentane (C_5H_{12}) reacting in the air at LFL. What is the value of "X" ?

LFLs are 1.1 Vol%, 1.2 Vol%, and 1.4 Vol%, respectively.



☒ 31.9

☐ 36.8

☐ 35.5

☐ 30.9

Question 5**1 / 1 pts**

For a fuel mixture consisting of 0.2 moles of heptane (C_7H_{16}), 0.6 moles of hexane (C_6H_{14}), and 1.2 mole of pentane (C_5H_{12}), what is the value of the stoichiometric air to fuel mass ratio? 15.2

If this mixture is at LFL, what is the equivalence ratio? 0.55

LFLs of each fuel is 1.1 Vol%, 1.2 Vol%, and 1.4 Vol%, respectively.

Answer 1:

15.2

Answer 2:

0.55

Question 6**1 / 1 pts**

Calculate the lower flammable limit for a fuel mixture that contains 0.2 moles of heptane (C_7H_{16}), 0.6 moles of hexane (C_6H_{14}), and 1.2 mole of pentane (C_5H_{12}) at $25^\circ C$. LFLs of each fuel is 1.1 Vol%, 1.2 Vol%, and 1.4 Vol%, respectively.

☒ 1.3 Vol%☐ 1.1 Vol%☐ 1.2 Vol%☐ 1.4 Vol%**Question 7****5 / 5 pts**

Methane's LFL at $25^\circ C$ is 5 Vol%. Calculate the LFL (Vol%) of methane at $50^\circ C$. Round your answer to the second decimal place and do not include any units.

Quiz Score: 15 out of 15