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Question: Find the weight of the products of combustion of 8 kg of light...

Find the weight of the products of combustion of 8 kg of light kerosene(C10H22), with 45% excess air. Determine the: a) Air-to-fuel ratio by mass (Actual). b) Weight of the products of combustion. c) Volumetric Analysis of the products of combustion

Expert Answer

 **Anonymous** answered this
225 answers

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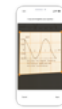
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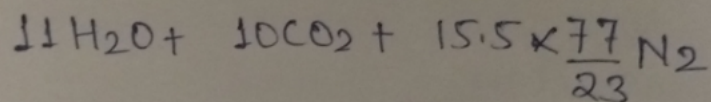
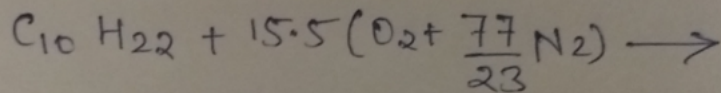
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① air contains 79% N_2 & 21% O_2 by vol.

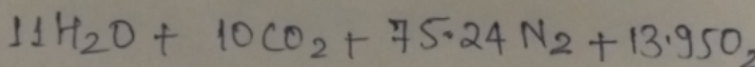
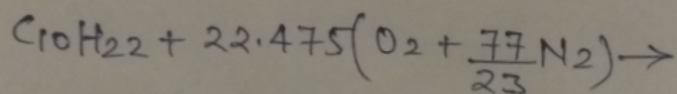
② air contains 77% N_2 & 23% O_2 by mass

⇒ By mass Analysis

⊙ Perfect stoichiometry

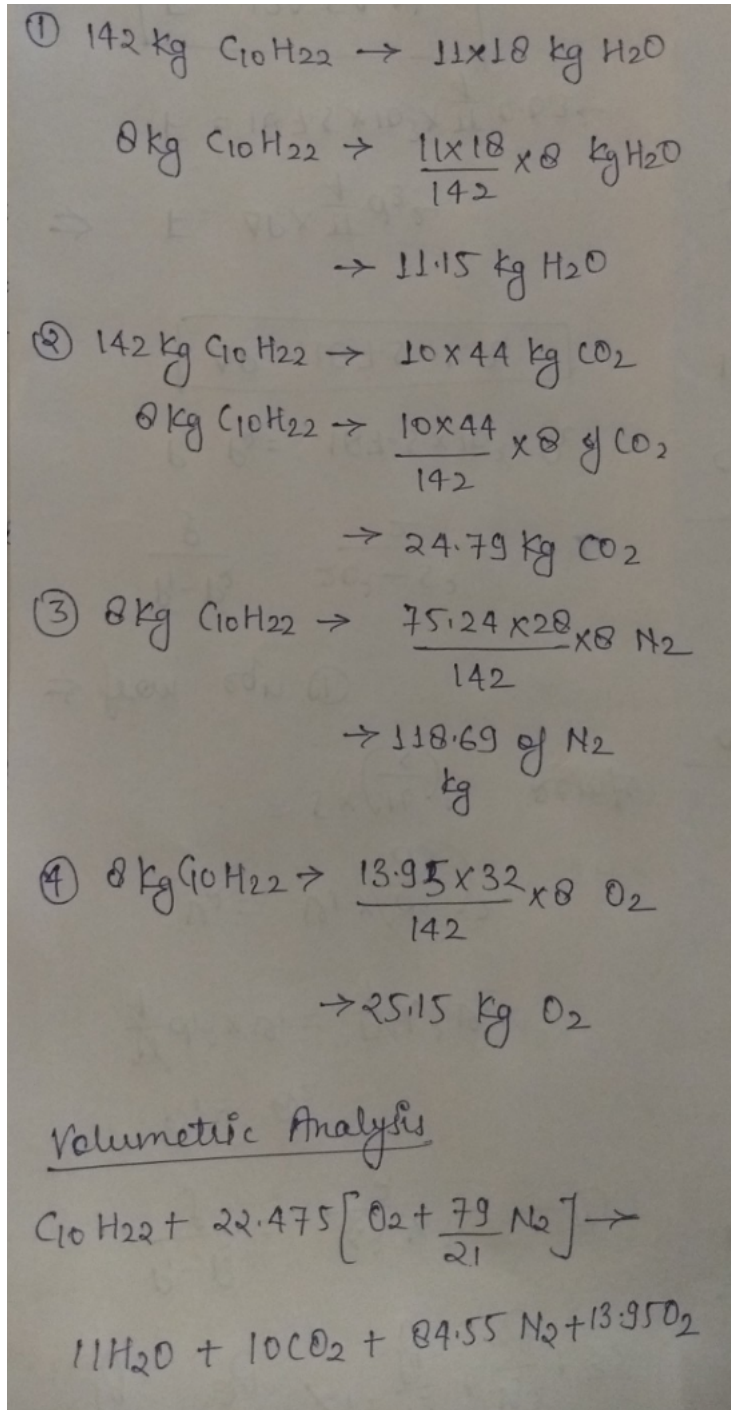


b). In 45% excess air, O_2 will be formed
 $15.5 \times 1.45 = 22.475$



$$\frac{A}{F} = \frac{22.475 \left[32 + \frac{77}{23} \times 28 \right]}{10 \times 12 + 22}$$

$$\boxed{\frac{A}{F} = 19.9}$$



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Up next for you in Mechanical Engineering

shown below (a) find the poles and

For each of the dynamical systems shown below:

- find the poles and the zeros,
- plot them on the s -plane,
- write an expression for the general form of the step response without solving for the inverse Laplace transform, and
- state the nature of each response (overdamped, underdamped, and so on).

a) $G(s) = \frac{1}{s^2 + 3s + 4}$
 b) $G(s) = \frac{10s + 7}{s^2 + 8s + 30}$
 c) $G(s) = \frac{20}{s^2 + 4s + 14}$
 d) $G(s) = \frac{s + 2}{s^2 + 4}$
 e) $G(s) = \frac{1}{s + 5}$

[See answer](#)

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