

## Unit 14 - Week 12: Chemical Reactions

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### Assignment 12

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

**Due on 2019-10-23, 23:59 IST.**

- 1) Among the following parameters, which one is always conserved during a chemical reaction? 1 point
- volume  
 mass  
 entropy  
 mole
- No, the answer is incorrect.  
Score: 0  
Accepted Answers: mass
- 2) Combustion is a highly irreversible process because 1 point
- mass is not conserved  
 energy is not conserved  
 it involves high temperature  
 it takes place very quickly
- No, the answer is incorrect.  
Score: 0  
Accepted Answers: it takes place very quickly
- 3) For a given mass of fuel, as the mass of air is gradually increased, corresponding 1 point
- adiabatic flame temperature decreases  
 adiabatic flame temperature increases  
 adiabatic flame temperature remains unchanged  
 nature of change in adiabatic flame temperature depends on the chemical composition of the fuel
- No, the answer is incorrect.  
Score: 0  
Accepted Answers: adiabatic flame temperature decreases
- 4) For 110% theoretical air, the equivalence ratio is 1 point
- 1.1  
 1  
 0.909  
 0.827
- No, the answer is incorrect.  
Score: 0  
Accepted Answers: 0.909
- 5) The dew point temperature of the product of combustion is maximum when the equivalence ratio is 1 point
- 0.85  
 1  
 1.15  
 1.5
- No, the answer is incorrect.  
Score: 0  
Accepted Answers: 1
- 6) If 1 kmol of H<sub>2</sub> is burned with 6 kmol of air, then corresponding percentage of theoretical air is 1 point
- 600  
 252  
 152  
 65
- No, the answer is incorrect.  
Score: 0  
Accepted Answers: 252
- 7) When 1 kg of propane is burned with stoichiometric air, then resultant mass of products of combustion (correct to 1 decimal place) is \_\_\_\_\_ kg. 1 point
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- Hint**
- No, the answer is incorrect.  
Score: 0  
Accepted Answers: (Type: Range) 16.2,17
- 8) When methane is burned with 200% theoretical air at a constant pressure of 101 kPa, the dew point temperature of the products of combustion (correct to 1 decimal place) is \_\_\_\_\_ °C. 1 point
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- Hint**
- No, the answer is incorrect.  
Score: 0  
Accepted Answers: (Type: Range) 45.2,46.4
- 9) The dry-based analysis of the combustion products of C<sub>10</sub>H<sub>22</sub> on mole basis shows 83.61% N<sub>2</sub>, 4.91% O<sub>2</sub>, 10.56% CO<sub>2</sub> and rest CO. Corresponding equivalence ratio (correct to 1 decimal place) is \_\_\_\_\_. 1 point
- 
- Hint**
- No, the answer is incorrect.  
Score: 0  
Accepted Answers: (Type: Range) 0.77,0.83
- 10) C<sub>5</sub>H<sub>10</sub> is burned with stoichiometric pure oxygen in a steady flow process. After rejecting some heat, the products at 700 K are used in a heat exchanger, where they are cooled to 25°C. Corresponding magnitude of heat transfer per unit mole of the fuel (correct to 1 decimal place) is \_\_\_\_\_ MJ/kmol of fuel. 1 point
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- Hint**
- No, the answer is incorrect.  
Score: 0  
Accepted Answers: (Type: Range) 350,390