

NPTEI

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Courses » Fundamentals Of Combustion (Part 1)

Announcements Course Ask a Question Progress Mentor

Unit 6 - Week 5 : Chemical Kinetics

Course outline	Week 5 Assessment 5	
	The due date for submitting this assignment has passed. Due on 2018-03-14	, 23:59 IST.
ow to access ne portal?	Submitted assignment	
Week 1 : ntroduction to Combustion Week 2 : Thermodynamics of combustion	1) Determine the mean speed (m/s) for CO molecules at 400°C. 713.3 632.2 831.3 532.2	1 poin
Veek 3 :	No, the answer is incorrect. Score: 0	
Week 4 : Chemical Equilubrium and Kinetics	Accepted Answers: 713.3 2) Determine the most probable speed (m/s) for CO molecules at 400°C	1 point
Veek 5 : Chemical Cinetics	731.3 632.2 831.3 532.2	
Lecture 21 Collision Theory	No, the answer is incorrect.	
Lecture 22	Score: 0	
Collision theory (Contd)	Accepted Answers: 632.2	
Lecture 23 Collision frequency of molecules	3) Which of the following statements are true for catalyzed reactions? Catalyzed reactions lower the activation energy.	1 point
Lecture 24 Specific reaction rate and Arrhenius law	 Catalyzed reactions do not take part in reactions Catalyzed reaction take part in reaction process Both (a) and (b) No, the answer is incorrect.	
Lecture 25 First order, Second order and Third- order reactions	Score: 0 Accepted Answers: Both (a) and (b)	
Quiz : Week 5 Assessment 5	4) Determine activation energy (kJ/mol) for the chemical reaction for the experimental conditions	3 points

Week 5Assessment 5

Fundamentals Of Combustion (Part 1) Unit 6 - Week 5 : Chemical Kinetic	
$2 X_2Y \rightarrow 2X_2 + Y_2$	

Solutions	$2 X_2 Y \rightarrow 2X_2 + Y_2$	
○ Week 5	T(K) k (Rate constant) m³/mol s	
Feedback	300 0.25×10 ⁻⁸	
Week 6 : Types of reaction and	700 0.85×10 ⁻²	
Introduction to Physics of combustion	35.5	
	25.5	
Week 7 : Transport Phenomena	45.555.5	
Week 8:	No, the answer is incorrect. Score: 0	
Conservation Equations	Accepted Answers: 45.5	
	5) The rate constant of the reaction increases by,	1 poin
	increasing the temperature	
	increasing the concentration of reactantsusing a catalyst	
	None of the above	
	No, the answer is incorrect. Score: 0	
	Accepted Answers:	
	increasing the concentration of reactants	
	6) Law of mass action holds good for	1 poin
	First order reactions	
	Second order reactions	
	Elementary reactions	
	Global reactions	
	No, the answer is incorrect. Score: 0	
	Accepted Answers: Elementary reactions	
	7) According to the collision theory, the chemical reaction occurs successfully only when i	t 1 poin
	 collides with a proper orientation determined by steric factor 	
	possess energy greater than the threshold energy	
	reactant molecules must be very reactive	
	Both (a) and (b)	
	No, the answer is incorrect. Score: 0	
	Accepted Answers: Both (a) and (b)	
	8) In a first-order reaction, the rate of reactant species	1 poin
	remains constant with time	
	decreases with time	
	decreases exponentially with time	
	None of the above	

No, the answer is incorrect. Score: 0

Accepted Answers:

decreases exponentially with time

9) In a reaction, $2H_2O$ à $2H_2(I) + O_2(g)$ the average rate of disappearance of H_2O over 2 point the time period from $t = 0$ to $t = 500$ min is found to be
$^{\circ}$ 4 ×10 ⁻⁵ mole/min. What is the rate of appearance of O ₂ over the same time period in mol/min?
 6×10⁻⁵ 4×10⁻⁵ 8×10⁻⁵ 2×10⁻⁵
No, the answer is incorrect. Score: 0
Accepted Answers: 2×10^{-5}
10) The decomposition of $2H_2O$ à $2H_2(I) + O_2(g)$ is first order in H_2O . It was found that an 2 point initial concentration of 0.25 dropped to 0.05 in 230 s during the experiment. What is the value of the rate constant?
 6.0×10⁻³ s⁻¹ 4.5×10⁻³ s⁻¹ 5.5×10⁻³ s⁻¹
\circ 7.0×10 ⁻³ s ⁻¹
No, the answer is incorrect. Score: 0
Accepted Answers: $7.0 \times 10^{-3} \text{ s}^{-1}$
11)Which of the following is wrongly stated regarding activation energy, 1 poi
 Activation energy can be negative. Activation energy is the energy above the threshold level for a reaction. Activation energy can be determined from Arrhenius plots. Catalysts lower the activation energy for reactions.
No, the answer is incorrect. Score: 0
Accepted Answers: Activation energy can be negative.
12)Which of the following is wrongly stated for Arrhenius equation 1 poi
 When activation energy increases, the reaction rate becomes faster With increase in temperature, reaction rate becomes faster. Smaller the fraction of activation energy to temperature faster the reaction rate Predict the rate of reaction at a different temperature if activation energy and the reaction rate at another temperature is known.
No, the answer is incorrect. Score: 0
Accepted Answers: When activation energy increases, the reaction rate becomes faster
13)Which of the following are the properties of compact notation, 1 poi
 Sparse coefficient matrix when involving a large number of species. This has been developed to represent both the mechanism and the individual species production rates.
It is particularly useful to solve chemical kinetics using computerAll of the above
No, the answer is incorrect. Score: 0 Accepted Answers:

All of the above

 14 Hydrogen Iodide with an initial concentration of 70 mol/m 3 is decomposed to H $_2$ and I $_2$ 3 points molecules as per the following reaction 2HI 12 H $_2$ H $_2$ It is found that 20% of the initial hydrogen iodide is decomposed in 45s. The half-life of the reaction is,

- 180.1
- 210.1
- 310.2
- 440.1

No, the answer is incorrect.

Score: 0

Accepted Answers:

180.1

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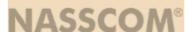
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