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NPTEL

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Courses » Introduction to Chemical Thermodynamics and Kinetics

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Unit 12 - Week 10

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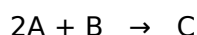
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Week 10

 Chemical
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Assignment 10

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2019-04-10, 23:59 IST.**1) The rate of the reaction 1 point

Becomes four times when the concentration of B is doubled and the rate becomes eight fold when the concentrations of both A and B are doubled. Find out the order of the reaction with respect to A and B

- 1 w.r.t A and 2 w.r.t. B
- 0 w.r.t A and 2 w.r.t. B
- 0 w.r.t A and 1 w.r.t. B
- 2 w.r.t A and 0 w.r.t. B

No, the answer is incorrect.**Score: 0****Accepted Answers:****1 w.r.t A and 2 w.r.t. B**2) A first order reaction takes 20 minutes for 10% of the reactant to undergo the reaction. Calculate the time needed for 10% of the reactant to remain unreacted 1 point

- 437 minutes
- 44 minutes
- 201 minutes
- 1000 minutes

No, the answer is incorrect.**Score: 0****Accepted Answers:****437 minutes**

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Quiz :
Assignment 10

Introduction to
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No, the answer is incorrect.

Score: 0

Accepted Answers:

4) At 25°C the specific rate constant for the hydrolysis of ethyl acetate by NaOH is $6.36 \text{ L mol}^{-1} \text{ min}^{-1}$. Starting with concentrations of base and ester as 0.02 mol/L , what proportion of ester will be hydrolysed in 10 min. If concentration of ester is 0.02 mol/L and concentration of base is 0.01 mol/L , what proportion of ester will be hydrolysed in 10 min 1 point

- 50%
 32%
 80%
 100%

No, the answer is incorrect.

Score: 0

Accepted Answers:

32%

5) 1 point



No, the answer is incorrect.

Score: 0

Accepted Answers:

6) For a reaction, the energy of activation (E) is 25 kcal mol^{-1} . Show that the temperature coefficient of the reaction at 25°C is 42.22. Find out the ratio of rate constant at 30°C and 25°C. Use Arrhenius equation 1 point

- 1.708
 5.298
 3.289
 4.865

No, the answer is incorrect.

Score: 0

Accepted Answers:

1.708

7) If the rate laws are expressed with (a) concentrations in moles per decimetre cubed, what are the units of the second order and third-order rate constants? 1 point

- $\text{dm}^3 \text{ mol}^{-1} \text{ s}^{-1}$ and $\text{dm}^6 \text{ mol}^{-2} \text{ s}^{-1}$
 $\text{mol}^{-1} \text{ s}^{-1}$ and $\text{dm}^6 \text{ mol}^{-2} \text{ s}^{-1}$

$\text{dm}^3 \text{mol}^{-1} \text{s}^{-1}$ and $\text{mol}^{-2} \text{s}^{-1}$

s^{-1} and $\text{dm}^6 \text{mol}^{-2} \text{s}^{-1}$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$\text{dm}^3 \text{mol}^{-1} \text{s}^{-1}$ and $\text{dm}^6 \text{mol}^{-2} \text{s}^{-1}$

8) The rate of the reaction $\text{A} + 2 \text{B} \rightarrow 3 \text{C} + \text{D}$ was reported as $1.0 \text{ mol dm}^{-3} \text{s}^{-1}$. The rates of formation and consumption of the participants A, B, C and D are **1 point**

$3.0 \text{ mol dm}^{-3} \text{s}^{-1}$, $3.0 \text{ mol dm}^{-3} \text{s}^{-1}$, $3.0 \text{ mol dm}^{-3} \text{s}^{-1}$ and $1.0 \text{ mol dm}^{-3} \text{s}^{-1}$

$2.0 \text{ mol dm}^{-3} \text{s}^{-1}$, $2.0 \text{ mol dm}^{-3} \text{s}^{-1}$, $3.0 \text{ mol dm}^{-3} \text{s}^{-1}$ and $3.0 \text{ mol dm}^{-3} \text{s}^{-1}$

$1.0 \text{ mol dm}^{-3} \text{s}^{-1}$, $2.0 \text{ mol dm}^{-3} \text{s}^{-1}$, $3.0 \text{ mol dm}^{-3} \text{s}^{-1}$ and $1.0 \text{ mol dm}^{-3} \text{s}^{-1}$

$3.0 \text{ mol dm}^{-3} \text{s}^{-1}$, $2.0 \text{ mol dm}^{-3} \text{s}^{-1}$, $3.0 \text{ mol dm}^{-3} \text{s}^{-1}$ and $2.0 \text{ mol dm}^{-3} \text{s}^{-1}$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$1.0 \text{ mol dm}^{-3} \text{s}^{-1}$, $2.0 \text{ mol dm}^{-3} \text{s}^{-1}$, $3.0 \text{ mol dm}^{-3} \text{s}^{-1}$ and $1.0 \text{ mol dm}^{-3} \text{s}^{-1}$

9) The rate law for the reaction $\text{A} + 2 \text{B} \rightarrow 3 \text{C} + \text{D}$ was found to be $v = k [\text{A}] [\text{B}]$. What are the units of k ? **1 point**

Express the rate law in terms of the rates of formation and consumption of A and C

$\text{dm}^3 \text{mol}^{-1} \text{s}^{-1}$, $k[\text{A}][\text{B}]$, $3 k[\text{A}][\text{B}]$

$\text{mol}^{-1} \text{s}^{-1}$, $k[\text{A}][\text{B}]$, $k[\text{A}][\text{B}]$

$\text{dm}^3 \text{mol}^{-1} \text{s}^{-1}$, $k[\text{A}][\text{B}]$, $k[\text{A}][\text{B}]$

s^{-1} , $k[\text{A}][\text{B}]$, $3 k[\text{A}][\text{B}]$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$\text{dm}^3 \text{mol}^{-1} \text{s}^{-1}$, $k[\text{A}][\text{B}]$, $3 k[\text{A}][\text{B}]$

10) At 518°C , the half-life for the decomposition of a sample of gaseous acetaldehyde (ethanal) initially at 363 Torr was 410 s. When the pressure was 169 Torr, the half-life was 880 s. Determine the order of the reaction **1 point**

2

1

0

3

No, the answer is incorrect.

Score: 0

Accepted Answers:

2

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