

Unit 3 - Week 2

Course outline

How to access the portal?

Week 1

Week 2

- Lecture 5 : Reaction Co-ordinate Diagrams
- Lecture 6 : The Hammond Postulate
- Lecture 7 : Kinetic versus Thermodynamic Control
- Lecture 8 : Curtin-Hammett Principle
- Lecture 9 : An Introduction to Reaction Kinetics

Quiz : Assignment 2

- Assignment 2 solutions
- Weekly Feedback

Week 3

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Week 6

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Week 8

Live Sessions

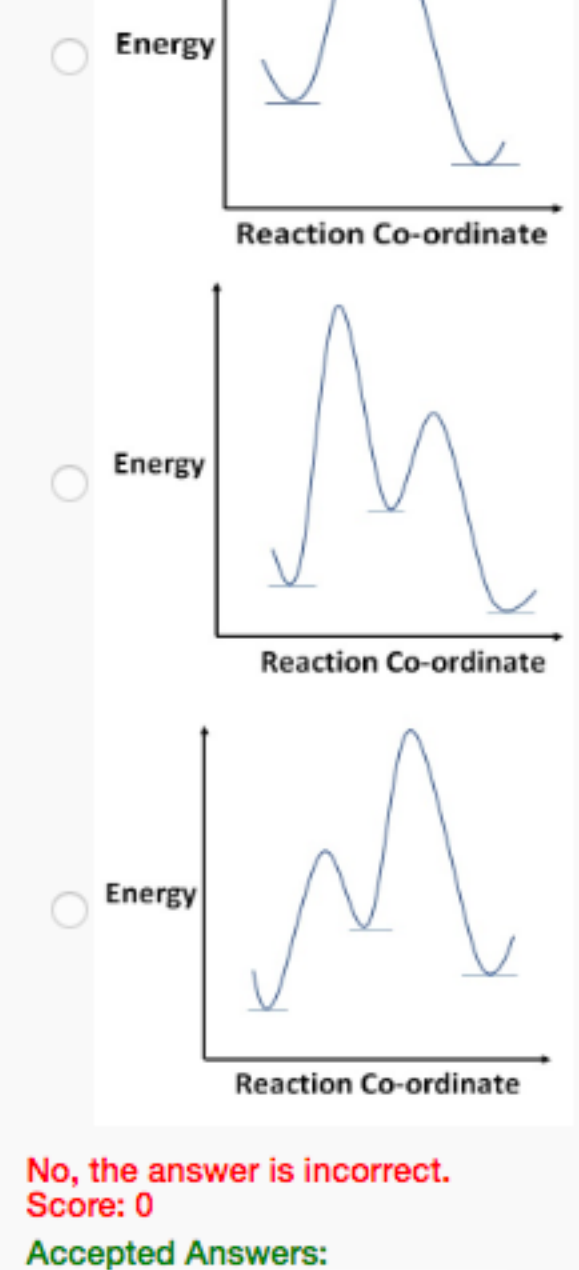
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Assignment 2

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

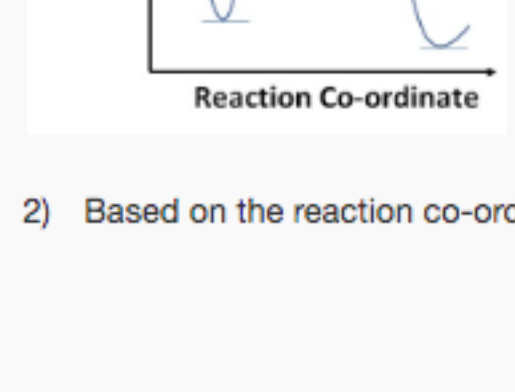
Due on 2019-08-21, 23:59 IST.

1) Which of the following reaction co-ordinate diagrams depicts the reaction given 1 point

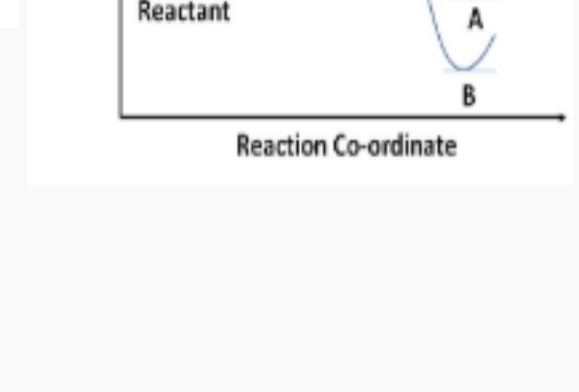
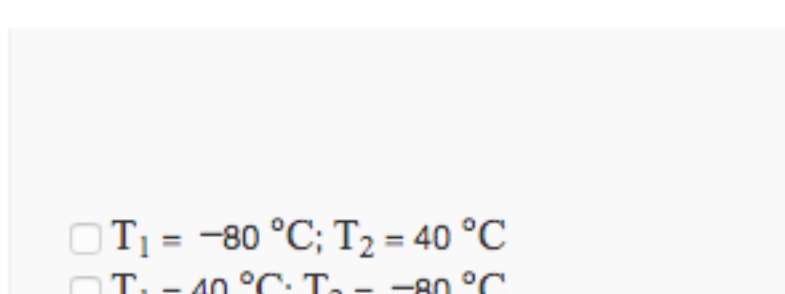


No, the answer is incorrect. Score: 0

Accepted Answers:



2) Based on the reaction co-ordinate diagram for the reaction below, choose the correct answer from the options given 1 point

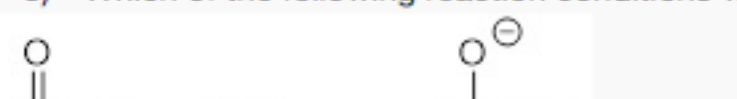


- T₁ = -80 °C; T₂ = 40 °C
- T₁ = 40 °C; T₂ = -80 °C
- A = CC(Br)C=C; B = CC=CC(Br)C
- A = CC=CC(Br)C; B = CC(Br)C=C

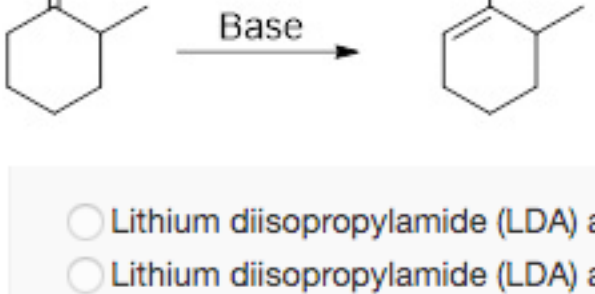
No, the answer is incorrect. Score: 0

Accepted Answers:

T₁ = -80 °C; T₂ = 40 °C



3) Which of the following reaction conditions will be the best to obtain the desired enolate as the major product? 1 point



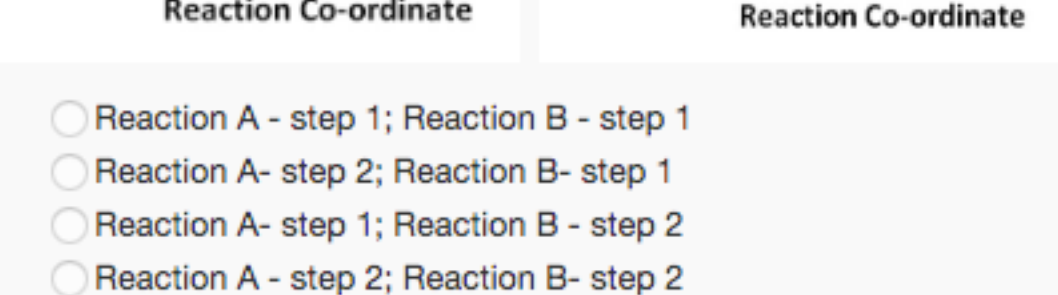
- Lithium diisopropylamide (LDA) as base and a low reaction temperature
- Lithium diisopropylamide (LDA) as base and a high reaction temperature
- Potassium acetate as base
- Sodium acetate as base

No, the answer is incorrect. Score: 0

Accepted Answers:

Lithium diisopropylamide (LDA) as base and a low reaction temperature

4) In the following reaction co-ordinate diagrams indicate which step is the rate determining step (rds) 1 point



- Reaction A - step 1; Reaction B - step 1
- Reaction A - step 2; Reaction B - step 1
- Reaction A - step 1; Reaction B - step 2
- Reaction A - step 2; Reaction B - step 2

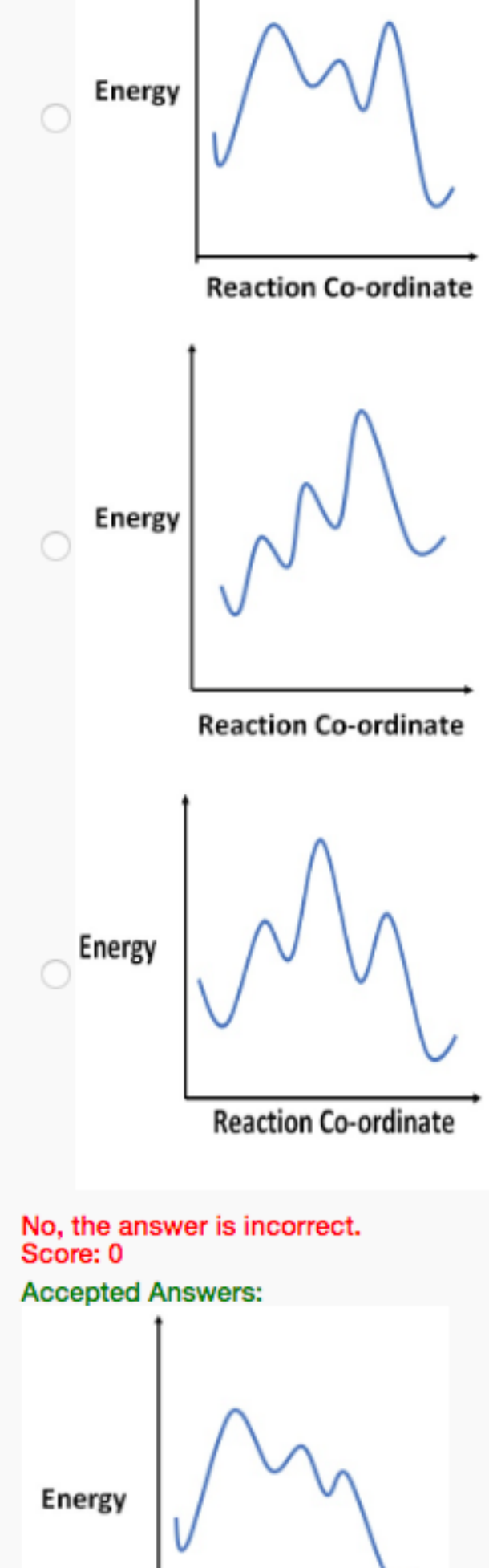
No, the answer is incorrect. Score: 0

Accepted Answers:

Reaction A - step 2; Reaction B - step 1

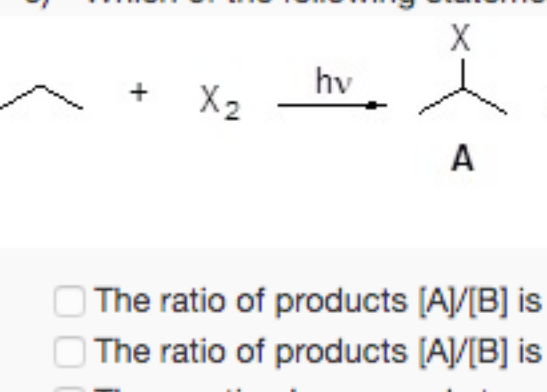
5) Which of the following represents a reaction co-ordinate diagram for a reaction with the following criteria: 1 point

- a) 3-step reaction, overall ΔG < 0.
- b) The first step is the rate determining step
- c) The second intermediate is more stable than the first intermediate
- d) The third step of the reaction is faster than the reverse of the second step.

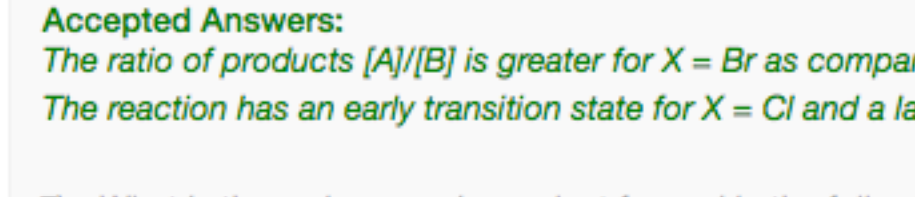


No, the answer is incorrect. Score: 0

Accepted Answers:



6) Which of the following statements is true for the halogenation of alkanes carried out as shown below. 1 point



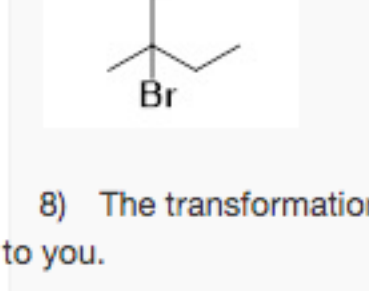
- The ratio of products [A]/[B] is greater for X = Br as compared to X = Cl.
- The ratio of products [A]/[B] is lower for X = Br as compared to X = Cl.
- The reaction has an early transition state for X = Cl and a late transition state for X = Br.
- The reaction has a late transition state for X = Cl and an early transition state for X = Br.

No, the answer is incorrect. Score: 0

Accepted Answers:

The ratio of products [A]/[B] is greater for X = Br as compared to X = Cl. The reaction has an early transition state for X = Cl and a late transition state for X = Br.

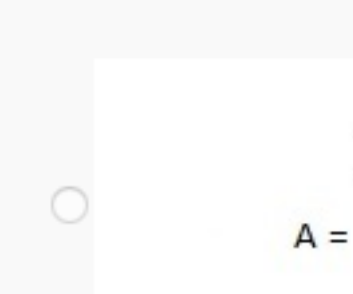
7) What is the major organic product formed in the following reaction? 1 point



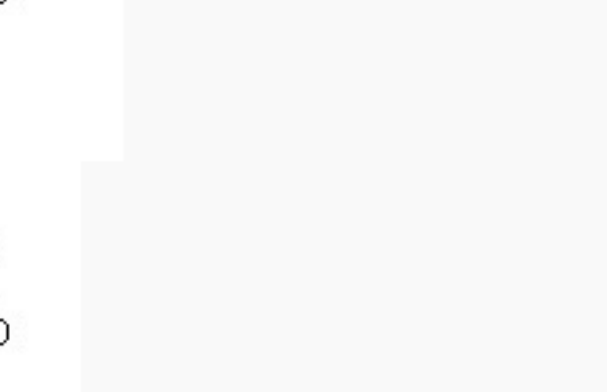
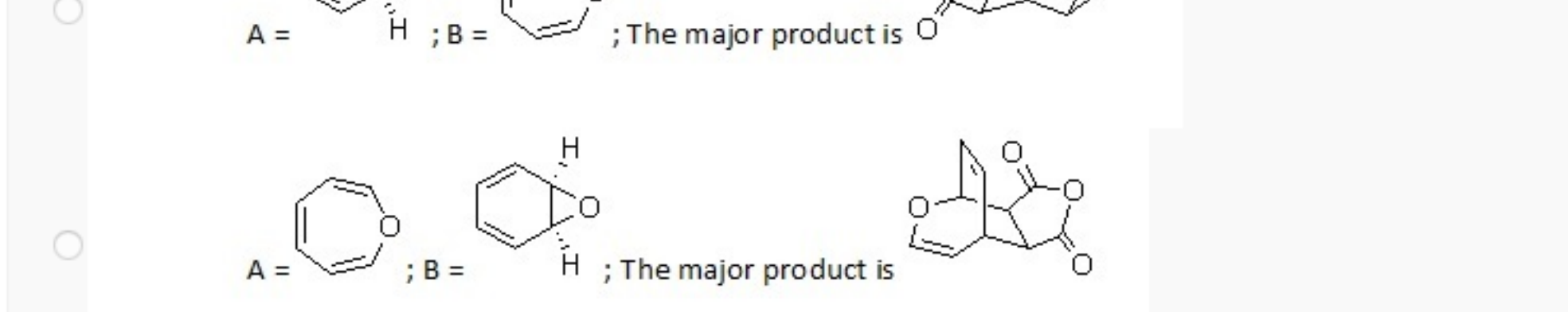
- CC(C)C(Br)C
- CC(C)C(Br)C
- CC(C)C(Br)C
- CC(C)C(Br)C

No, the answer is incorrect. Score: 0

Accepted Answers:



8) The transformation given below is represented by the reaction coordinate diagram shown. Choose the correct answer based on the information given 1 point



- A = O=C1OC2C(=O)OC1C2; B = O=C1OC2C(=O)OC1C2; The major product is O=C1OC2C(=O)OC1C2
- A = O=C1OC2C(=O)OC1C2; B = O=C1OC2C(=O)OC1C2; The major product is O=C1OC2C(=O)OC1C2
- A = O=C1OC2C(=O)OC1C2; B = O=C1OC2C(=O)OC1C2; The major product is O=C1OC2C(=O)OC1C2
- A = O=C1OC2C(=O)OC1C2; B = O=C1OC2C(=O)OC1C2; The major product is O=C1OC2C(=O)OC1C2

No, the answer is incorrect. Score: 0

Accepted Answers:



9) Based on Hammond postulate, a highly exothermic reaction will have 1 point

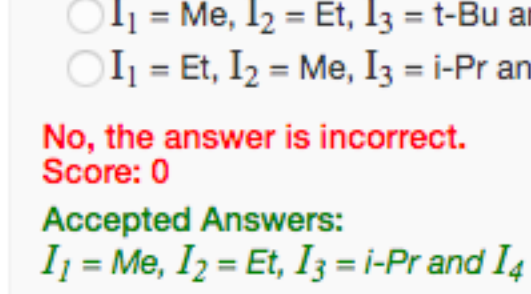
- An early transition state
- A late transition state
- A symmetric transition state

No, the answer is incorrect. Score: 0

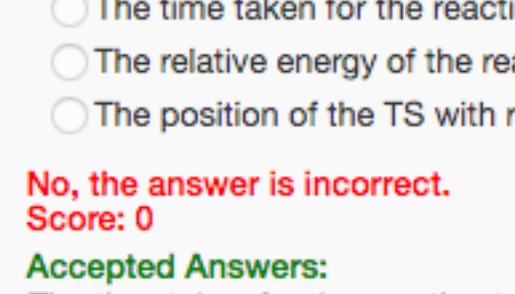
Accepted Answers:

An early transition state

10) The first step of S_N1 reaction is represented by the equation given below. 1 point



A reaction coordinate diagram of S_N1 reactions where R = Me, Et, i-Pr and t-Bu is provided to you. Based on your knowledge of the Hammond postulate choose the correct answer.



- I₁ = Me, I₂ = Et, I₃ = i-Pr and I₄ = t-Bu
- I₁ = t-Bu, I₂ = i-Pr, I₃ = Et and I₄ = Me
- I₁ = Me, I₂ = Et, I₃ = t-Bu and I₄ = i-Pr
- I₁ = Et, I₂ = Me, I₃ = i-Pr and I₄ = t-Bu

No, the answer is incorrect. Score: 0

Accepted Answers:

I₁ = Me, I₂ = Et, I₃ = i-Pr and I₄ = t-Bu

11) Which of the following information do you not obtain from a reaction coordinate diagram. 1 point

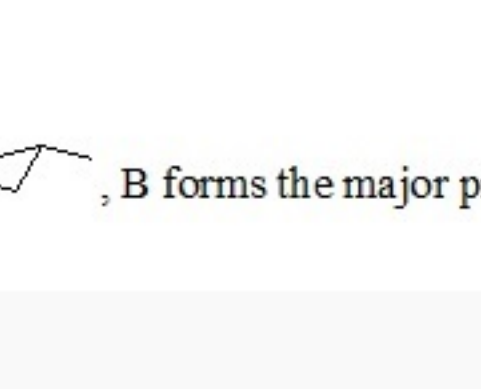
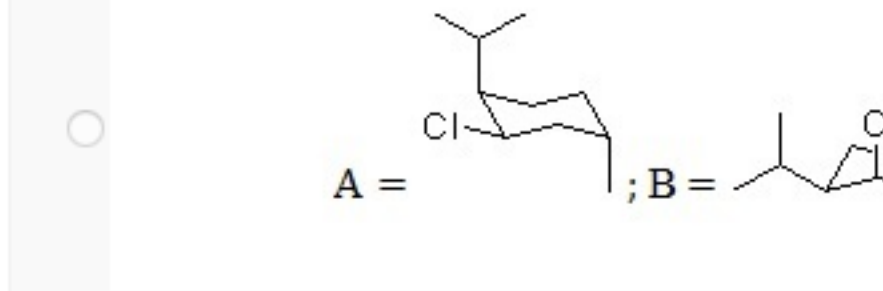
- The number of intermediates/steps in a reaction
- The time taken for the reaction to complete
- The relative energy of the reactant, intermediate and transition state
- The position of the TS with respect to reactant and product

No, the answer is incorrect. Score: 0

Accepted Answers:

The time taken for the reaction to complete

12) The two conformers of neomenthyl chloride given below can undergo E2 elimination in the presence of a base to give an olefin. The reaction coordinate diagram for the reaction is provided. Choose the correct answer from the options given. 1 point



- A = CC1(C)CC(Cl)C1; B = CC1(C)CC(Cl)C1; A forms the major product.
- A = CC1(C)CC(Cl)C1; B = CC1(C)CC(Cl)C1; A forms the major product.
- A = CC1(C)CC(Cl)C1; B = CC1(C)CC(Cl)C1; B forms the major product.
- A = CC1(C)CC(Cl)C1; B = CC1(C)CC(Cl)C1; B forms the major product.

No, the answer is incorrect. Score: 0

Accepted Answers:

