YUKON CHEMISTRY 12 (MCH--12) · UNIT A · 25 QUESTIONS

Reaction Rates — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **For a reaction to occur, reactant particles must**

- A collide gently in any orientation
- B remain far apart and move slowly
- C collide with enough energy and the right orientation
- D break apart before they meet

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2 **The rate of a reaction is best described as the**

- A change in concentration of a reactant or product per unit time
- B total mass of reactants used in the reaction
- C temperature at which the reaction starts
- D energy released when the reaction finishes

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3 **Increasing the concentration of a reactant usually increases the rate because**

- A the activation energy of the reaction increases
- B the products become more stable
- C the catalyst is used up more slowly
- D there are more collisions per second between particles

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4 **Raising the temperature of a reacting mixture increases the rate mainly because**

- A the reactants become less concentrated
- B a larger fraction of collisions have at least the activation energy
- C the activation energy becomes zero
- D the products stop reacting

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5 **A powdered solid reacts faster than a single lump of the same solid because**

- A the powder has a larger surface area exposed to the other reactant
- B the powder has a lower activation energy
- C the lump has more total mass
- D the powder contains a catalyst

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6 **A catalyst speeds up a reaction by**

- A increasing the energy of the products
- B being used up to form extra product
- C providing a pathway with a lower activation energy
- D raising the temperature of the mixture

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7 **Which statement about a catalyst is true**

A it is consumed in the reaction

B it is not consumed in the overall reaction

C it changes the overall enthalpy change of the reaction

D it makes an endothermic reaction exothermic

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8 **The activation energy of a reaction is the**

A total energy released by the reaction

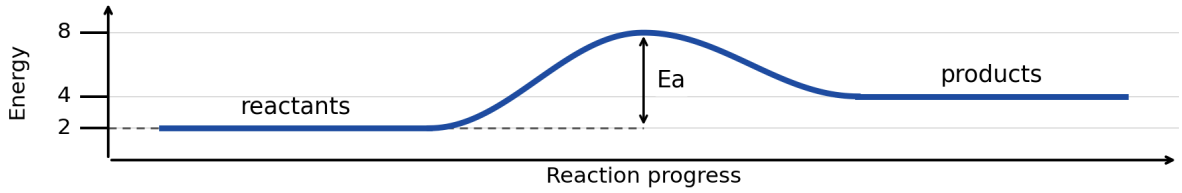
B energy of the products alone

C average kinetic energy of all particles

D minimum energy colliding particles need to react

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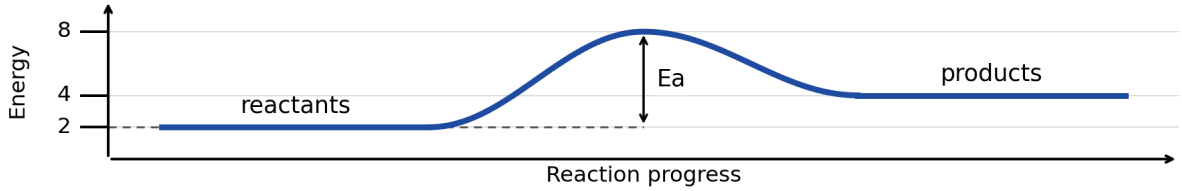
9 **The diagram shows the energy profile for a reaction. Reactants are at 2, the peak is at 8, and products are at 4. The activation energy, in the diagram units, is _____**



ANSWER _____

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10 **The diagram shows the energy profile for a reaction. Reactants are at 2, the peak is at 8, and products are at 4. The enthalpy change of the reaction, in the diagram units, is**



A -2

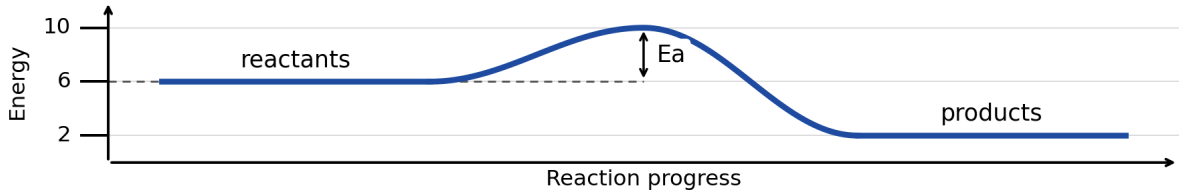
B +6

C -6

D +2

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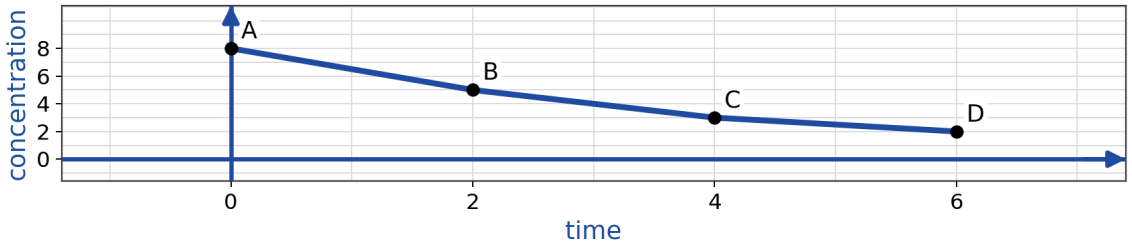
11 **The diagram shows the energy profile for a reaction. Reactants are at 6, the peak is at 10, and products are at 2. The activation energy, in the diagram units, is _____**



ANSWER

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12 **The graph shows reactant concentration against time. Points are (0, 8), (2, 5), (4, 3), and (6, 2). During which time interval is the reaction fastest**



A 2 to 4 minutes

B 4 to 6 minutes

C 0 to 2 minutes

D The rate is constant

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13 **For the reaction A + B → products, the rate law is rate = k[A][B]. Doubling [A] only will**

- A double the rate
- B quadruple the rate
- C halve the rate
- D leave the rate unchanged

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14 **For a reaction with rate law rate = k[A]²[B], doubling [A] while [B] is constant will**

- A double the rate
- B quadruple the rate
- C halve the rate
- D leave the rate unchanged

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15 For a reaction with rate law rate = $k[A][B]^2$, tripling [B] while [A] is constant will multiply the rate by

- **A** 3
- **B** 6
- **C** 27
- **D** 9

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16 In an experiment, doubling [A] doubles the initial rate, while doubling [B] has no effect on the rate. The rate law is

- **A** rate = k[B]
- **B** rate = k[A][B]
- **C** rate = k[A]
- **D** rate = $k[A]^2$

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17 **In an experiment, doubling [A] quadruples the initial rate. The order of the reaction with respect to A is**

- A 0
- B 2
- C 1
- D 3

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18 **A reaction is zero order with respect to B. Doubling [B] will**

- A leave the rate unchanged
- B double the rate
- C quadruple the rate
- D halve the rate

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19 **The rate constant k for a reaction increases when**

A the concentration increases

B the pressure decreases

C more product is added

D the temperature increases

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20 **Which change would slow down the reaction of zinc with hydrochloric acid**

A using a large piece of zinc instead of zinc powder

B using more concentrated acid

C warming the acid

D stirring the mixture

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21 **Two identical reactions are run, one with a catalyst and one without. The catalyzed reaction has a**

- **A** higher activation energy and a larger enthalpy change
- **B** lower activation energy and more product at equilibrium
- **C** lower activation energy and the same enthalpy change
- **D** higher activation energy and less product

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22 **The concentration of a reactant falls from 0.80 mol/L to 0.20 mol/L in 30 seconds. The average rate of consumption, in mol/L/s, is**

- **A** 0.010
- **B** 0.020
- **C** 0.030
- **D** 0.060

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23 **A product forms at an average rate of 0.040 mol/L/s for 25 seconds. The increase in its concentration, in mol/L, is**

- **A** 1.0
- **B** 0.50
- **C** 1.5
- **D** 2.0

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24 **As a reaction proceeds, its rate usually decreases because**

- **A** the activation energy rises steadily
- **B** the catalyst is consumed
- **C** reactant concentrations fall, so collisions become less frequent
- **D** the temperature always falls

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25 **Which factor does NOT affect the rate of a chemical reaction**

A the temperature of the mixture

B the colour of the container

C the surface area of a solid reactant

D the presence of a catalyst

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ANSWER KEY

1. C
2. A
3. D
4. B
5. A
6. C
7. B
8. D
9. 6
10. D
11. 4
12. C
13. A
14. B
15. D
16. C
17. B
18. A
19. D
20. A
21. C
22. B
23. A
24. C
25. B

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