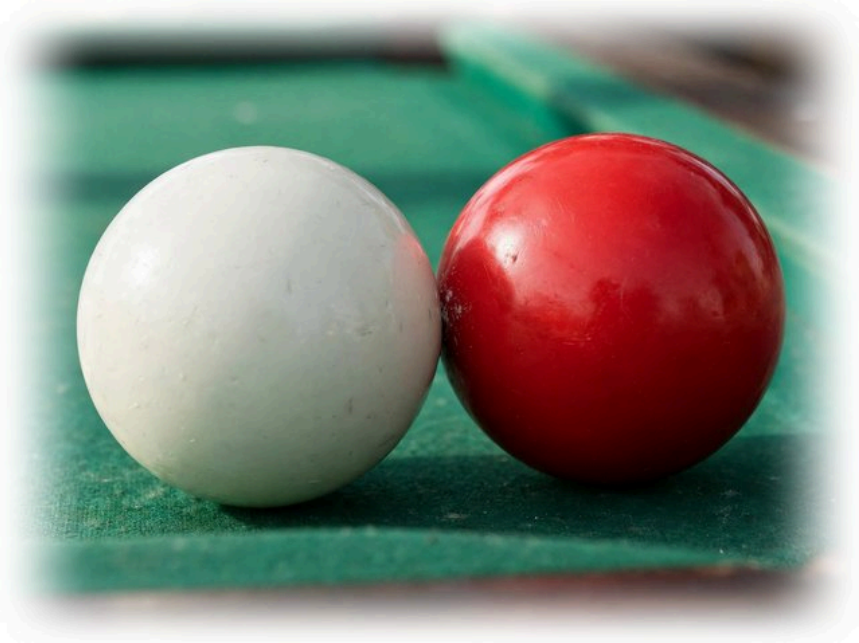
BRITISH COLUMBIA CHEMISTRY 12 (MCH--12) · UNIT A · 25 QUESTIONS

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

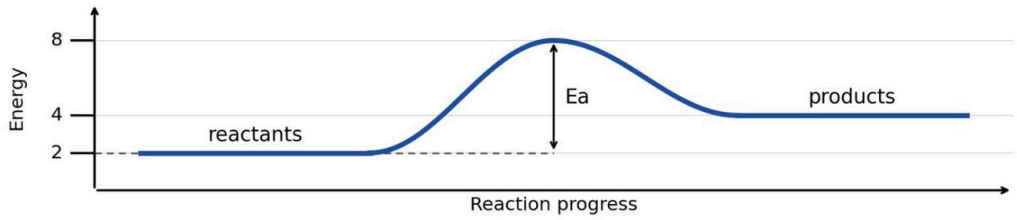
C average kinetic energy of all particles

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 ____**

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Question 9

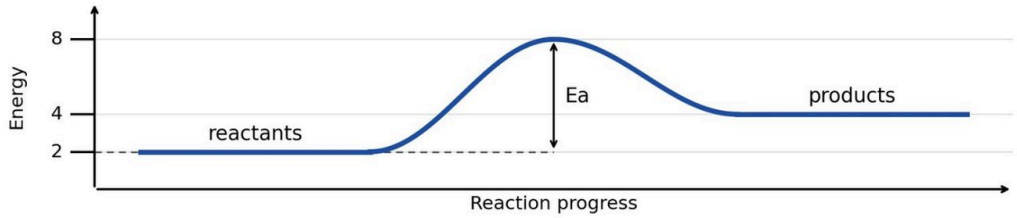
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ANSWER

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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**

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Question 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

A -2

B +6

C -6

D +2

A -2

B +6

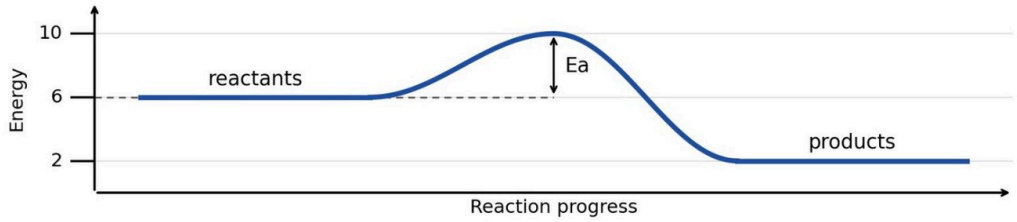
C -6

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 ____**

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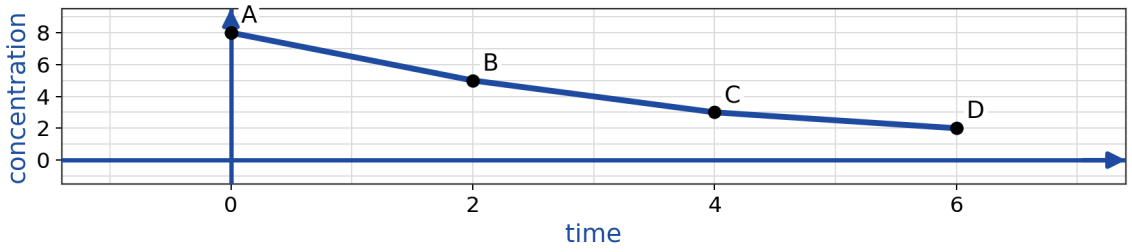
Question 11

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

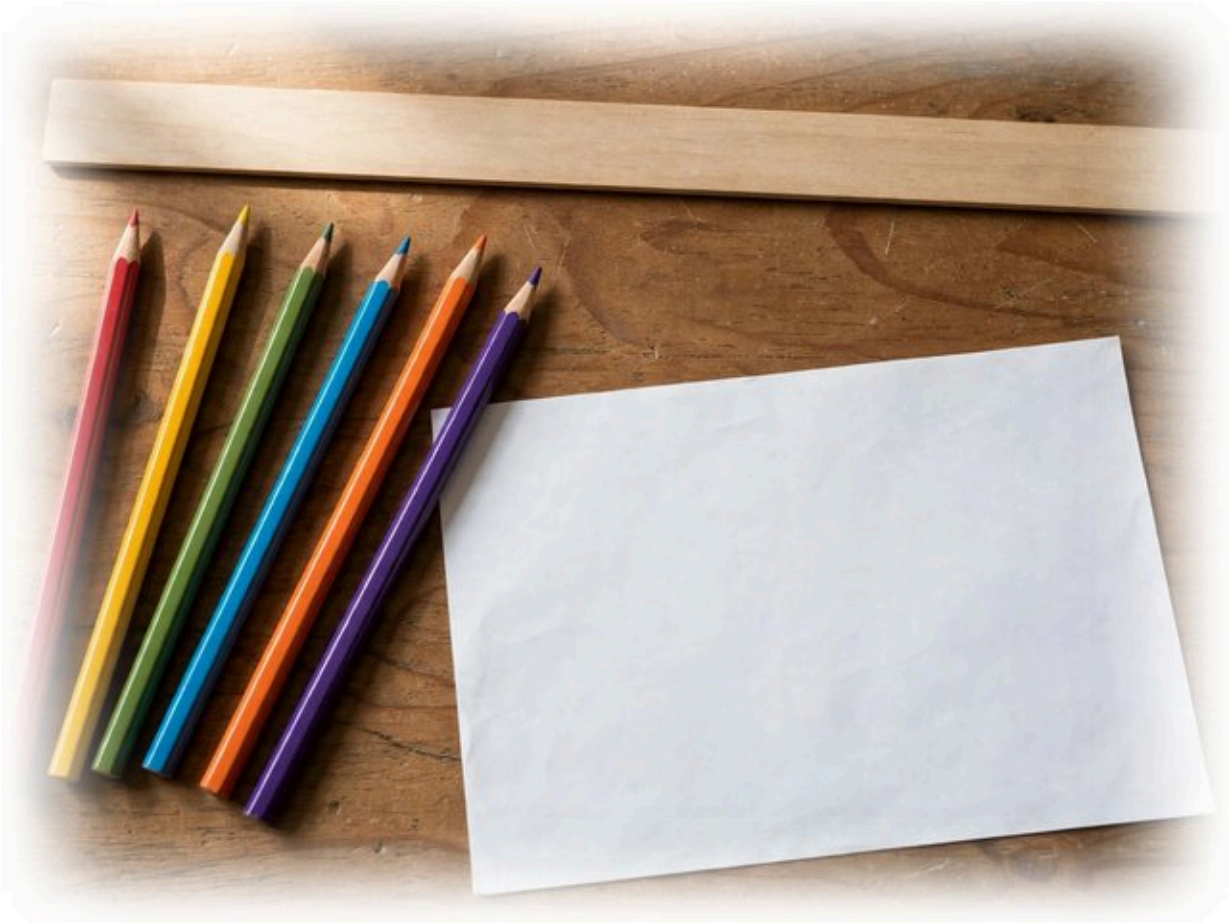
B the catalyst is consumed

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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