ONTARIO CHEMISTRY, GRADE 12, UNIVERSITY PREPARATION (SCH4U) · UNIT C · 25 QUESTIONS

Energy Changes and Rates of Reaction — 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 **An exothermic reaction releases energy to the surroundings and the temperature of the surroundings**

- A Rises
- B Falls then rises
- C Stays the same
- D Falls

Understand It with Pulse | Flag a mistake

2 **In an endothermic reaction, the enthalpy change delta H is**

- **A** Positive
- **B** Always one
- **C** Zero
- **D** Negative

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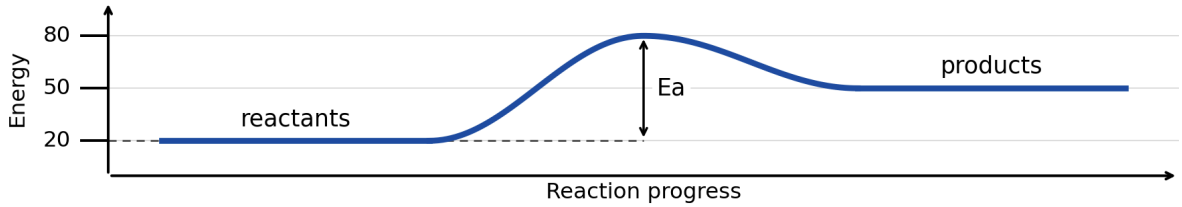
3 **The energy diagram shows reactants at 20, a peak at 80, and products at 50. The activation energy is**



- **A** 130
- **B** 100
- **C** 30
- **D** 60

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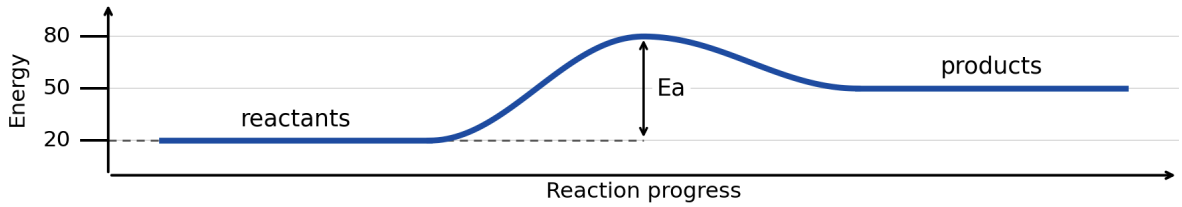
4 **The energy diagram shows reactants at 20, a peak at 80, and products at 50. The enthalpy change is**



- **A** +60
- **B** +30
- **C** -30
- **D** -60

Understand It with Pulse | Flag a mistake

5 **A catalyst increases reaction rate by**

- **A** Increasing temperature
- **B** Providing a pathway with lower activation energy
- **C** Increasing reactant energy
- **D** Changing the products

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6 **A catalyst is not consumed in a reaction because it is**

A Destroyed

B Regenerated

C A reactant only

D A product only

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7 **Increasing concentration usually increases reaction rate because collisions become**

A Less frequent

B Elastic only

C Slower

D More frequent

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8 **Increasing surface area increases reaction rate for a solid because more particles are**

A Inside the solid

B Heated

C Dissolved

D Exposed at the surface

Understand It with Pulse | Flag a mistake

9 **According to collision theory, a reaction occurs only if colliding particles have sufficient**

A Mass

B Colour

C Charge

D Energy and correct orientation

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10 **The rate of a reaction is defined as the change in concentration per unit**

A Temperature

B Time

C Mass

D Volume

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11 **For a first order reaction, doubling reactant concentration**

A Has no effect

B Doubles the rate

C Halves the rate

D Quadruples the rate

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12 **For a second order reaction in one reactant, doubling its concentration makes the rate**

- A Quadruple
- B Stay the same
- C Halve
- D Double

Understand It with Pulse | Flag a mistake

13 **The rate law for a reaction with rate = kA^2 is**

- A Second order in A
- B Third order in A
- C Zero order in A
- D First order in A

Understand It with Pulse | Flag a mistake

14 **A rate determining step is the**

A Fastest step

B Slowest step

C Last step always

D First step always

Understand It with Pulse | Flag a mistake

15 **Hess law states that enthalpy change for a reaction is independent of the**

A Reactants used

B Pressure

C Temperature

D Path taken

Understand It with Pulse | Flag a mistake

16 **Given delta H for A to B is -100 kilojoules per mole and B to C is -50, the enthalpy change for A to C is**

A -150 kilojoules per mole

B +50 kilojoules per mole

C +150 kilojoules per mole

D -50 kilojoules per mole

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17 **The enthalpy of formation of carbon dioxide is -394 kilojoules per mole. Forming 2 moles releases**

A 197 kilojoules

B 394 kilojoules

C 788 kilojoules

D 1182 kilojoules

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18 **Bond breaking is always**

A Endothermic

B Neutral

C Spontaneous

D Exothermic

Understand It with Pulse | Flag a mistake

19 **Bond forming is always**

A Impossible

B Endothermic

C Neutral

D Exothermic

Understand It with Pulse | Flag a mistake

20 **Calorimetry measures heat change using the temperature change of a known mass of**

A Reactant only

B Product gas

C Catalyst

D Water or surroundings

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21 **A calorimeter contains 100 grams of water with specific heat capacity 4.19 joules per gram degree Celsius. A temperature rise of 10 degrees Celsius gives heat absorbed, in joules, of**

ANSWER _____

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22 **The units of a first order rate constant are**

A Per second

B Seconds

C Litres per mole per second

D Moles per litre per second

Understand It with Pulse | Flag a mistake

23 **Increasing temperature increases reaction rate mainly because more particles exceed the**

A Melting point

B Freezing point

C Activation energy

D Boiling point

Understand It with Pulse | Flag a mistake

24 **An inhibitor decreases reaction rate by**

- **A** Heating reactants
- **B** Lowering activation energy
- **C** Increasing concentration
- **D** Raising activation energy or blocking a pathway

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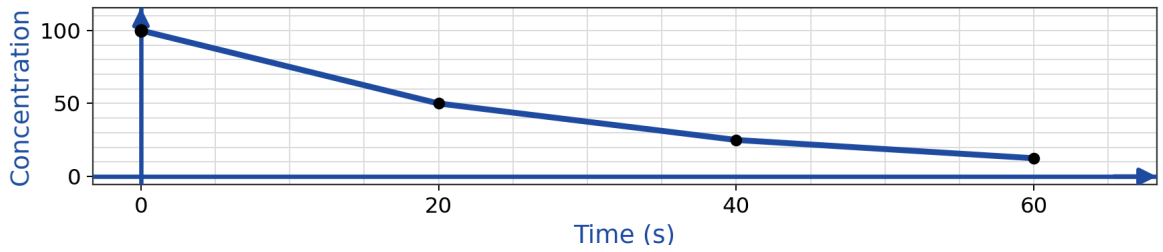
25 **The graph shows concentration falling from 100 to 50 in 20 seconds and to 25 in 40 seconds. The half life is**



- **A** 80 seconds
- **B** 40 seconds
- **C** 10 seconds
- **D** 20 seconds

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ANSWER KEY

1. A
2. A
3. D
4. B
5. B
6. B
7. D
8. D
9. D
10. B
11. B
12. A
13. A
14. B
15. D
16. A
17. C
18. A
19. D
20. D
21. 4190
22. A
23. C
24. D
25. D

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