MASSACHUSETTS CHEMISTRY · UNIT 4 · 25 QUESTIONS

Gases, Thermodynamics, and Equilibrium — 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 **According to Boyle law, at constant temperature, when gas pressure increases, volume**

- A increases
- B decreases
- C stays the same
- D becomes zero

Understand It with Pulse | Flag a mistake

2 **A gas at 100 kPa occupies 6 L. At the same temperature, at 200 kPa, its volume, in liters, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

3 **According to Charles law, at constant pressure, when Kelvin temperature increases, volume**

A increases

B decreases

C stays the same

D becomes zero

Understand It with Pulse | Flag a mistake

4 **A gas occupies 2 L at 300 K. At constant pressure, at 600 K, its volume, in liters, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

5 **At constant volume, gas pressure is directly proportional to**

A mass

B density

C Kelvin temperature

D Celsius temperature

Understand It with Pulse | Flag a mistake

6 **A gas at 100 kPa and 300 K is heated to 600 K at constant volume. Its new pressure, in kilopascals, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

7 **Kinetic molecular theory describes gas particles as**

- **A** fixed in a lattice
- **B** always bonded together
- **C** moving slowly in straight lines only
- **D** in constant random motion with large spaces between them

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8 **A gas mixture has partial pressures of 120 kPa and 180 kPa. The total pressure, in kilopascals, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

9 **At standard temperature and pressure, the volume, in liters, of 2 mol of gas is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

10 **For an exothermic reaction, the enthalpy change is**

- A positive
- B negative
- C zero
- D undefined

Understand It with Pulse | Flag a mistake

11 **In an endothermic reaction, heat is**

- A released and the surroundings warm
- B released and the surroundings cool
- C absorbed and the surroundings cool
- D absorbed and the surroundings warm

Understand It with Pulse | Flag a mistake

12 **Using c = 4.2 J per gram per degree Celsius, the heat, in joules, absorbed by 100 g of water warmed by 10 degrees Celsius is _____**

ANSWER _____

Understand It with Pulse | Flag a mistake

13 **Adding more reactant to a system at equilibrium shifts the equilibrium**

A to the left

B to neither side

C to the right only if a catalyst is present

D to the right

Understand It with Pulse | Flag a mistake

14 **A catalyst in a reversible reaction**

A shifts equilibrium to the products

B speeds up both forward and reverse reactions without changing the equilibrium position

C shifts equilibrium to the reactants

D changes the equilibrium constant

Understand It with Pulse | Flag a mistake

15 **A gas at 200 kPa occupies 4 L. At the same temperature, at 100 kPa, its volume, in liters, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

16 **At equilibrium, the forward and reverse reaction rates are**

A both zero

B forward only

C equal, while concentrations stay constant

D reverse only

Understand It with Pulse | Flag a mistake

17 **For $N_2 + 3H_2 \rightleftharpoons 2NH_3$, increasing pressure shifts equilibrium to the**

A right, toward fewer moles of gas

B left, toward more moles of gas

C neither side

D right, toward more moles of gas

Understand It with Pulse | Flag a mistake

18 **A gas mixture has total pressure 500 kPa, and one gas has partial pressure 200 kPa. The mole fraction of that gas is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

19 **Entropy increases when a solid**

A freezes

B condenses

C crystallizes

D melts

Understand It with Pulse | Flag a mistake

20 **Using c = 4.2 J per gram per degree Celsius, the heat, in joules, absorbed by 50 g of water warmed by 10 degrees Celsius is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

21 **A large equilibrium constant means the equilibrium mixture favors the**

A reactants

B products

C catalyst

D solvent

Understand It with Pulse | Flag a mistake

22 **A gas occupies 6 L at 546 K. At constant pressure, at 273 K, its volume, in liters, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

23 **In an exothermic reaction, the surroundings**

- A cool down
- B stay at the same temperature
- C warm up
- D lose all heat

Understand It with Pulse | Flag a mistake

24 **Heating an endothermic reaction at equilibrium shifts equilibrium toward the**

- A products
- B reactants
- C catalyst
- D neither side

Understand It with Pulse | Flag a mistake

25

A gas at 150 kPa occupies 4 L. At the same temperature, at 300 kPa, its volume, in liters, is ____

ANSWER

Understand It with Pulse

Flag a mistake

ANSWER KEY

1. B
2. 3
3. A
4. 4
5. C
6. 200
7. D
8. 300
9. 44.8
10. B
11. C
12. 4200
13. D
14. B
15. 8
16. C
17. A
18. 0.4
19. D
20. 2100
21. B
22. 3
23. C
24. A
25. 2

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