ALBERTA CHEMISTRY 20 · UNIT B · 25 QUESTIONS

Forms of Matter: Gases — 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 **A temperature of 25°C is equivalent to**

- A 248 K
- B 273 K
- C 298 K
- D 323 K

Understand It with Pulse | Flag a mistake

2 **A gas pressure of 303.9 kPa is equivalent to Use 1.00 atm = 101.325 kPa.**

- A 0.333 atm
- B 3.00 atm
- C 30.0 atm
- D 0.0300 atm

Understand It with Pulse | Flag a mistake

3 **The pressure-volume graph below is for a fixed amount of gas at constant temperature. What is the pressure of the gas when its volume is 4.0 L?**

- A 60 kPa
- B 120 kPa
- C 240 kPa
- D 480 kPa

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4 **Which statement is consistent with the kinetic molecular theory of gases?**

- A Gas particles occupy most of the volume of their container
- B Gas particles attract each other with strong forces
- C Gas particles are in constant random motion and collide elastically
- D Gas particles stop moving at 0°C

Understand It with Pulse | Flag a mistake

5 **A gas sample is cooled to a temperature of -23°C. Its temperature, in kelvin, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

6 **A sample of gas occupies 2.4 L at a pressure of 120 kPa. At constant temperature, the gas is compressed to a volume of 0.80 L. The new pressure of the gas, in kilopascals, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

7 **A balloon has a volume of 3.0 L at 27°C. At constant pressure, the balloon is heated to 127°C. The new volume of the balloon is**

A 2.3 L

B 4.0 L

C 14 L

D 1.3 L

Understand It with Pulse | Flag a mistake

8 **An automobile tire has a gas pressure of 210 kPa at 20°C. After driving, the temperature of the air in the tire rises to 50°C while the volume stays constant. The new pressure in the tire is**

- A 232 kPa
- B 191 kPa
- C 525 kPa
- D 210 kPa

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9 **At STP, the molar volume of any gas is 22.4 L/mol. The volume occupied by 0.50 mol of a gas at STP, in litres, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

10 **A mixture of three gases in a container has a total pressure of 150 kPa. The partial pressure of nitrogen is 90 kPa and the partial pressure of oxygen is 40 kPa. The partial pressure of the third gas is**

A 60 kPa

B 100 kPa

C 130 kPa

D 20 kPa

Understand It with Pulse | Flag a mistake

11 **A sample of gas occupies 3.0 L at a pressure of 150 kPa and a temperature of 27°C. Use R = 8.314 L· kPa/(mol· K). The amount of gas, to the nearest thousandth of a mole, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

12 **A gas sample has a volume of 5.0 L at 100 kPa and 27°C. The sample is changed to STP (0°C and 101.325 kPa). The new volume of the gas is**

A 4.5 L

B 4.9 L

C 5.1 L

D 5.5 L

Understand It with Pulse | Flag a mistake

13 **What pressure is exerted by 2.00 mol of a gas in a 10.0 L container at 27°C? Use R = 8.314 L· kPa/(mol· K).**

A 250 kPa

B 4.99 kPa

C 499 kPa

D 998 kPa

Understand It with Pulse | Flag a mistake

14 **A sample of gas occupies 600 mL at 20°C. The gas is heated at constant pressure to 80°C. The new volume of the gas, to the nearest millilitre, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

15 **A real gas behaves least like an ideal gas under conditions of**

A Low pressure and high temperature

B Low pressure and low temperature

C High pressure and high temperature

D High pressure and low temperature

Understand It with Pulse | Flag a mistake

16 **A 0.960 g sample of a pure gas occupies 0.500 L at 100 kPa and 27°C. Use R = 8.314 L· kPa/(mol· K). The molar mass of the gas, to the nearest tenth of a gram per mole, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

17 **A gas is collected over water at 25°C. The total pressure of the collected gas is 101.3 kPa, and the vapour pressure of water at 25°C is 3.17 kPa. The pressure of the dry gas is**

A 3.17 kPa

B 98.1 kPa

C 101.3 kPa

D 104.5 kPa

Understand It with Pulse | Flag a mistake

18 **The volume-temperature graph below is for a fixed amount of gas at constant pressure. What is the volume of the gas when its temperature is 300 K?**

A 3.0 L

B 6.0 L

C 9.0 L

D 12 L

Understand It with Pulse | Flag a mistake

19 **A gas has a molar mass of 44.0 g/mol. At STP, its molar volume is 22.4 L/mol. The density of the gas at STP is**

- A 0.509 g/L
- B 2.20 g/L
- C 44.0 g/L
- D 1.96 g/L

Understand It with Pulse | Flag a mistake

20 **A 2.00 L sample of gas at 95.0 kPa and 25°C is compressed to a volume of 1.20 L and heated to 75°C. The final pressure is**

- A 158 kPa
- B 475 kPa
- C 185 kPa
- D 66.6 kPa

Understand It with Pulse | Flag a mistake

21 **When the value R = 8.314 L· kPa/(mol· K) is used in the ideal gas law, the temperature must be in ____ and the pressure in ____.**

- A Degrees Celsius and kilopascals
- B Kelvin and kilopascals
- C Kelvin and atmospheres
- D Degrees Celsius and atmospheres

Understand It with Pulse | Flag a mistake

22 **The molar volume of a gas at STP is 22.4 L/mol. The amount of gas, in moles, in a 5.60 L sample at STP is**

- A 0.125 mol
- B 0.500 mol
- C 0.250 mol
- D 4.00 mol

Understand It with Pulse | Flag a mistake

23 **A 3.0 L sample of nitrogen gas contains 0.13 mol. At the same temperature and pressure, the amount of gas in a 6.0 L sample is**

- **A** 0.065 mol
- **B** 0.13 mol
- **C** 0.39 mol
- **D** 0.26 mol

Understand It with Pulse | Flag a mistake

24 **A sealed spray can is left in a hot vehicle, and its internal pressure increases. According to the kinetic molecular theory, this happens because the gas particles**

- **A** Collide with the walls more often and with greater force
- **B** Expand so that each particle takes up more space
- **C** Are attracted to each other more strongly
- **D** Increase in number as the temperature rises

Understand It with Pulse | Flag a mistake

25 **A 1.00 mol sample of an ideal gas occupies 24.8 L at a pressure of 100 kPa. Use R = 8.314 L· kPa/(mol· K). The temperature of the gas, to the nearest kelvin, is ____**

ANSWER

Understand It with Pulse | Flag a mistake

ANSWER KEY

1. C
2. B
3. B
4. C
5. 250
6. 360
7. B
8. A
9. 11.2
10. D
11. 0.180
12. A
13. C
14. 723
15. D
16. 47.9
17. B
18. B
19. D
20. C
21. B
22. C
23. D
24. A
25. 298

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