

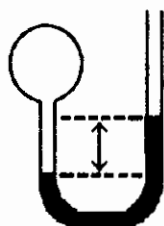
Practice Exam 1 Chemistry 152 Spring Semester 2006

There are 25 questions and each is worth 5 points.

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) A gas at a pressure of 10.0 Pa exerts a force of _____ N on an area of 5.5 m².
A) 55 B) 18 C) 1.8 D) 0.55 E) 5.5
- 2) Which of the following equations shows an incorrect relationship between pressures given in terms of different units?
A) 1.0 torr = 2.00 mmHg
B) 152 mmHg = 2.03 × 10⁴ Pa
C) 1.00 atm = 760 torr
D) 0.760 atm = 578 mmHg
E) 1.20 atm = 122 kPa
- 3) A closed-end manometer was attached to a vessel containing argon. The difference in the mercury levels in the two arms of the manometer was 12.2 cm. Atmospheric pressure was 783 mmHg. The pressure of the argon in the container was _____ mmHg.
A) 661 B) 882 C) 771 D) 795 E) 122
- 4) A gas vessel is attached to an open-end manometer filled with a nonvolatile liquid of density 0.993 g/mL as shown below.



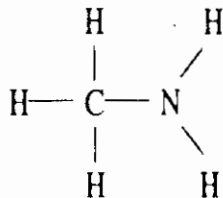
- The difference in heights of the liquid in the two sides of the manometer is 32.3 cm when the atmospheric pressure is 765 mmHg. Given that the density of mercury is 13.6 g/mL, the pressure of the enclosed gas is _____ atm.
A) 0.993 B) 1.01 C) 1.04 D) 0.976 E) 1.08
- 5) The first person to investigate the relationship between the pressure of a gas and its volume was _____.
A) Lord Kelvin
B) Robert Boyle
C) Amadeo Avogadro
D) Joseph Louis Gay-Lussac
E) Jacques Charles

- 6) Of the following, _____ is a correct statement of Boyle's law.
 A) $\frac{V}{P} = \text{constant}$ B) $\frac{V}{T} = \text{constant}$ C) $\frac{P}{V} = \text{constant}$ D) $PV = \text{constant}$ E) $\frac{n}{P} = \text{constant}$
- 7) Of the following, only _____ is impossible for an ideal gas.
 A) $V_1T_1 = V_2T_2$ B) $\frac{V_1}{V_2} = \frac{T_1}{T_2} = 0$ C) $V_2 = \frac{T_2}{T_1}V_1$ D) $\frac{V_1}{V_2} = \frac{T_1}{T_2}$ E) $\frac{V_1}{T_1} = \frac{V_2}{T_2}$
- 8) When an additional _____ mol of gas is added at constant temperature and volume to a flask containing 2.00 mol of gas at 25°C and 1.00 atm pressure, the pressure increases to 1.60 atm.
 A) 1.00 B) 1.20 C) 0.800 D) 3.20 E) 5.2
- 9) A sample of H₂ gas (12.28 g) occupies 100.0 L at 400.0 K and 2.00 atm. A sample weighing 9.49 g occupies _____ L at 353 K and 2.00 atm.
 A) 147 B) 109 C) 68.2 D) 54.7 E) 77.3
- 10) The reaction of 50 mL of N₂ gas with 150 mL of H₂ gas to form ammonia via the equation:

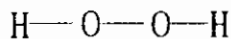
$$\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightarrow 2\text{NH}_3(\text{g})$$
 will produce _____ mL of ammonia if pressure and temperature are kept constant.
 A) 100 B) 50 C) 200 D) 150 E) 250
- 11) The pressure of a sample of CH₄ gas (6.022 g) in a 30.0 L vessel at 402 K is _____ atm.
 A) 22.4 B) 0.414 C) 12.4 D) 6.62 E) 2.42
- 12) For which of the following changes is it not clear whether the volume of a particular sample of an ideal gas will increase or decrease?
 A) keep temperature constant and decrease the pressure
 B) decrease the temperature and increase the pressure
 C) increase the temperature and increase the pressure
 D) increase the temperature and decrease the pressure
 E) increase the temperature and keep the pressure constant
- 13) The molecular weight of a gas is _____ g/mol if 3.5 g of the gas occupies 2.1 L at STP.
 A) 41 B) 4.6×10^2 C) 37 D) 2.7×10^{-2} E) 5.5×10^3
- 14) The volume of HCl gas required to react with excess magnesium metal to produce 6.82 L of hydrogen gas at 2.19 atm and 35°C is _____ L.
 A) 2.19 B) 13.6 C) 3.41 D) 4.38 E) 6.82
- 15) A vessel contained N₂, Ar, He, and Ne. The total pressure in the vessel was 987 torr. The partial pressures of nitrogen, argon, and helium were 44, 486, and 218 torr, respectively. The partial pressure of neon in the vessel was _____ torr.
 A) 521 B) 760 C) 42.4 D) 19.4 E) 239

22) Which one of the following substances will not have hydrogen bonding as one of its intermolecular forces?

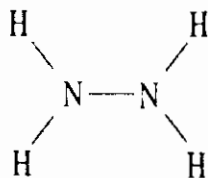
A)



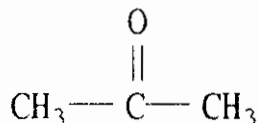
B)



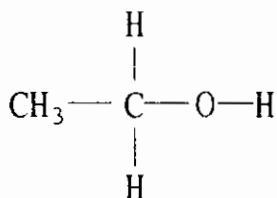
C)



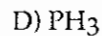
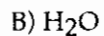
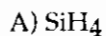
D)



E)



23) Which one of the following should have the lowest boiling point?



24) The direct conversion of a solid to a gas is called _____.

A) vaporization

B) sublimation

C) boiling

D) condensation

E) fusion

25) The heat of fusion of water is 6.01 kJ/mol. The heat capacity of liquid water is 75.2 J/mol · K. The conversion of 50.0 g of ice at 0.00°C to liquid water at 22.0°C requires _____ kJ of heat.

A) 0.469

B) 3.8×10^2

C) 21.3

D) 17.2

E) Insufficient data are given.

Answer Key

Testname: PRACTICE_TEST_1.TST

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

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