

Ch 16 Practice test**Matching**

You need your own calculator for the test.

I will not answer any questions about this test after tutorials on the first day the test is given.

Match each item with the correct statement below.

- | | |
|-----------------------|----------------------------|
| a. Henry's law | d. supersaturated solution |
| b. immiscible | e. concentration |
| c. saturated solution | |

- ___ 1. describes liquids that are insoluble in one another
- ___ 2. solution containing maximum amount of solute
- ___ 3. solution containing more solute than can theoretically dissolve at a given temperature
- ___ 4. At a given temperature, the solubility of a gas in a liquid is directly proportional to the pressure of the gas above the liquid.
- ___ 5. measure of the amount of solute dissolved in a specified quantity of solvent

Match each item with the correct statement below.

- | | |
|----------------|------------|
| a. molarity | d. solute |
| b. dilutions | e. solvent |
| c. Henry's law | |

- ___ 6. number of moles of solute dissolved in 1 L of solution
- ___ 7. reduces the number of moles per solution
- ___ 8. directly proportional
- ___ 9. solid substance
- ___ 10. a liquid

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- ___ 11. Which of the following usually makes a substance dissolve faster in a solvent?
- agitating the solution
 - increasing the particle size of the solute
 - lowering the temperature
 - decreasing the number of particles
- ___ 12. Which of the following pairs of factors affects the solubility of a particular substance?
- temperature and the nature of solute and solvent
 - temperature and degree of mixing
 - particle size and degree of mixing
 - particle size and temperature

- _____ 24. What does NOT change when a solution is diluted by the addition of solvent?
- | | |
|----------------------|------------------------------|
| a. volume of solvent | c. number of moles of solute |
| b. mass of solvent | d. molarity of solution |
- _____ 25. How many mL of a 2.0M NaBr solution are needed to make 200.0 mL of 0.50M NaBr?
- | | |
|----------|-----------|
| a. 25 mL | c. 100 mL |
| b. 50 mL | d. 150 mL |
- _____ 26. If 2.0 mL of 6.0M HCl is used to make a 500.0-mL aqueous solution, what is the molarity of the dilute solution?
- | | |
|-----------|----------|
| a. 0.024M | c. 0.30M |
| b. 0.24M | d. 0.83M |
- _____ 27. To 225 mL of a 0.80M solution of KI, a student adds enough water to make 1.0 L of a more dilute KI solution. What is the molarity of the new solution?
- | | |
|---------|----------|
| a. 180M | c. 0.35M |
| b. 2.8M | d. 0.18M |

Short Answer

28. If the solubility of a gas is 7.5 g/L at 404 kPa pressure, what is the solubility of the gas when the pressure is 202 kPa?
29. How many liters of a 0.30M solution are needed to give 2.7 moles of solute?
30. What is the molarity of a solution containing 9.0 moles of solute in 2500 mL of solution?
31. What is the molarity of a solution containing 1.2 grams of solute in 450 mL of solution? (molar mass of solute = 24 g)
32. What is the number of moles of solute in 650 mL of a 0.40M solution?
33. How many liters of a 1.5M solution are required to yield 5.0 grams of solute? (molar mass of solute = 30.0 g)
34. If 1.0 mL of 6.0M HCl is added to 499 mL of water to give exactly a 500-mL solution, what is the molarity of the dilute solution?

Ch 16 Practice test Answer Section

MATCHING

- | | | | | |
|-----|-----------------------|-----------------------|---------|----------------------|
| 1. | ANS: B
OBJ: 16.1.2 | PTS: 1
STA: Ch.6 | DIF: L1 | REF: p. 473 |
| 2. | ANS: C
OBJ: 16.1.3 | PTS: 1
STA: Ch.6 | DIF: L1 | REF: p. 473 |
| 3. | ANS: D
OBJ: 16.1.3 | PTS: 1
STA: Ch.6.c | DIF: L1 | REF: p. 474 |
| 4. | ANS: A
OBJ: 16.1.3 | PTS: 1
STA: Ch.6.c | DIF: L1 | REF: p. 476 |
| 5. | ANS: E
OBJ: 16.2.1 | PTS: 1
STA: Ch.6.d | DIF: L1 | REF: p. 480 p. 481 |
| 6. | ANS: A
OBJ: 16.2.1 | PTS: 1
STA: Ch.6.d | DIF: L1 | REF: p. 481 p. 482 |
| 7. | ANS: B
OBJ: 16.3.1 | PTS: 1
STA: Ch.6.e | DIF: L1 | REF: p. 488 p. 489 |
| 8. | ANS: C
OBJ: 16.3.1 | PTS: 1
STA: Ch.6.e | DIF: L1 | REF: p. 487 p. 490 |
| 9. | ANS: D | PTS: 1 | | |
| 10. | ANS: E | PTS: 1 | | |

MULTIPLE CHOICE

- | | | | | |
|-----|-----------------------|-----------------------|---------|----------------------|
| 11. | ANS: A
OBJ: 16.1.1 | PTS: 1
STA: Ch.6.b | DIF: L2 | REF: p. 471 p. 472 |
| 12. | ANS: A
OBJ: 16.1.3 | PTS: 1
STA: Ch.6.c | DIF: L2 | REF: p. 473 p. 474 |
| 13. | ANS: B
OBJ: 16.1.3 | PTS: 1
STA: Ch.6.c | DIF: L2 | REF: p. 476 |
| 14. | ANS: A
OBJ: 16.1.4 | PTS: 1
STA: Ch.6.c | DIF: L1 | REF: p. 476 p. 477 |
| 15. | ANS: A
OBJ: 16.1.4 | PTS: 1
STA: Ch.6.c | DIF: L3 | REF: p. 476 p. 477 |
| 16. | ANS: B
OBJ: 16.2.1 | PTS: 1
STA: Ch.6.d | DIF: L1 | REF: p. 480 |
| 17. | ANS: D
OBJ: 16.2.1 | PTS: 1
STA: Ch.6.d | DIF: L1 | REF: p. 481 |
| 18. | ANS: D
OBJ: 16.2.1 | PTS: 1
STA: Ch.6.d | DIF: L1 | REF: p. 480 p. 481 |
| 19. | ANS: B
OBJ: 16.2.1 | PTS: 1
STA: Ch.6.d | DIF: L2 | REF: p. 480 |
| 20. | ANS: B
OBJ: 16.2.1 | PTS: 1
STA: Ch.6.d | DIF: L2 | REF: p. 481 |

21. ANS: A PTS: 1 DIF: L2 REF: p. 480 | p. 482
OBJ: 16.2.1 STA: Ch.6.d
22. ANS: A PTS: 1 DIF: L3 REF: p. 481 | p. 482
OBJ: 16.2.1 STA: Ch.6.d
23. ANS: D PTS: 1 DIF: L3 REF: p. 481 | p. 482
OBJ: 16.2.1 STA: Ch.6.d
24. ANS: C PTS: 1 DIF: L1 REF: p. 483
OBJ: 16.2.2 STA: Ch.6.d
25. ANS: B PTS: 1 DIF: L2 REF: p. 483 | p. 484
OBJ: 16.2.2 STA: Ch.6.d
26. ANS: A PTS: 1 DIF: L2 REF: p. 483 | p. 484
OBJ: 16.2.2 STA: Ch.6.d
27. ANS: D PTS: 1 DIF: L3 REF: p. 483 | p. 484
OBJ: 16.2.2 STA: Ch.6.d

SHORT ANSWER

28. ANS:

$$S_2 = \frac{S_1 \times P_2}{P_1} = \frac{7.5 \text{ g/L} \times 202 \text{ kPa}}{404 \text{ kPa}} = 3.8 \text{ g/L}$$

PTS: 1 DIF: L2 REF: p. 476 | p. 477
OBJ: 16.1.4 STA: Ch.6.c

29. ANS:

$$2.7 \text{ mol} \times \frac{1 \text{ L}}{0.30 \text{ mol}} = 9.0 \text{ L}$$

PTS: 1 DIF: L1 REF: p. 480 OBJ: 16.2.1
STA: Ch.6.d

30. ANS:

$$\frac{9.0 \text{ mol}}{2500 \text{ mL}} \times \frac{1000 \text{ mL}}{1 \text{ L}} = 3.6 \text{ mol/L}$$

PTS: 1 DIF: L2 REF: p. 480 | p. 481
OBJ: 16.2.1 STA: Ch.6.d

31. ANS:

$$\frac{1.2 \text{ g}}{450 \text{ mL}} \times \frac{1 \text{ mol}}{24 \text{ g}} \times \frac{1000 \text{ L}}{1 \text{ L}} = 0.11 \text{ M}$$

PTS: 1 DIF: L2 REF: p. 480 | p. 481
OBJ: 16.2.1 STA: Ch.6.d

32. ANS:

$$650 \text{ mL} \times \frac{0.4 \text{ mol}}{1000 \text{ mL}} = 0.26 \text{ mol}$$

PTS: 1 DIF: L2 REF: p. 480 | p. 482
OBJ: 16.2.1 STA: Ch.6.d

33. ANS:

$$\frac{1\text{L}}{1.5\text{mol}} \times \frac{1\text{mol}}{30.0\text{g}} \times 5.0\text{g} = 0.11\text{L}$$

PTS: 1

DIF: L3

REF: p. 480 | p. 481

OBJ: 16.2.1

STA: Ch.6.d

34. ANS:

$$M_2 = \frac{M_1 \times V_1}{V_2} = 6.0M \times \frac{1.0\text{mL}}{500\text{mL}} = 0.012M$$

PTS: 1

DIF: L2

REF: p. 483 | p. 484

OBJ: 16.2.2

STA: Ch.6.d