Gen Chem II Lecture Spring 20 Dr. Hahn A section Quiz 3 2/7 Friday Exam # _____

Name Key Print Name _____

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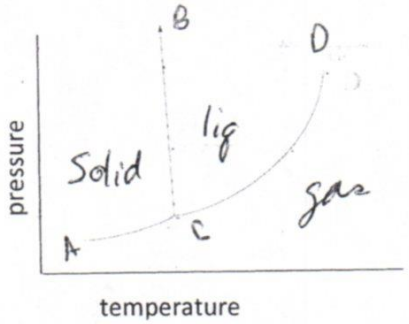
(a) CD line (b) AC line (c) CB line (d) All of these. (3 pts)



2. Which type of bonding does Ca form upon solidification ?
(a) Molecular (b) covalent network (c) metallic (d) ionic (1 pt)

3. Although there are exceptions, which is most likely true for the dissolving of a solid in a liquid ?
(a) ΔS_{soln} is negative (b) ΔS_{soln} is positive (c) ΔH_{soln} is positive (d) ΔH_{soln} is negative (1 pt)

4. Arrange the following compounds in order of their expected increasing solubility in water:
NaF, $CH_3CH_2—O—CH_2CH_3$, $CH_3CH_2CH_2CH_2—OH$, $CH_3CH_2CH_2CH_3$ (1 pt)

(a) $CH_3CH_2CH_2CH_3 < CH_3CH_2—O—CH_2CH_3 < CH_3CH_2CH_2CH_2—OH < NaF$
(b) $CH_3CH_2CH_2CH_3 < CH_3CH_2—O—CH_2CH_3 < NaF < CH_3CH_2CH_2CH_2—OH$
(c) $NaF < CH_3CH_2—O—CH_2CH_3 < CH_3CH_2CH_2CH_2—OH < CH_3CH_2CH_2CH_3$
(d) $CH_3CH_2CH_2CH_2—OH < NaF < CH_3CH_2—O—CH_2CH_3 < CH_3CH_2CH_2CH_3$

5 What is the molarity (M) of a solution of 23.5 grams of KCl (FM = 74.6 g/mol) to make up 523.2 mL of the solution. (7 pts)

$\#moles = 23.5\,g \times \frac{1\,mol}{74.6\,g} = 0.315\,mol$ 2pt

$523.2\,ml \times \frac{1\,l}{1000\,ml} = 0.5232\,l$ 2pt

$M = \frac{0.315\,mol}{0.5232\,l} = 0.602\,M$ 2pt

algebra -1
math -½

6 What is the molality (m) of a solution of 35.2 grams of NaNO3 (FM = 85.0 g/mol) in 252 mL of water. (density of water is 1.00 g/mL) (7 pts)

$35.2\,g\,NaNO_3 \times \frac{1\,mol}{85.0\,g} = 0.414\,mol$ 2pt

$252\,ml \times \frac{1.00\,g}{1\,ml} \times \frac{kg}{1000\,g} = 0.252\,kg$ 2pt

$\frac{0.414\,mol}{0.252\,kg} = 1.64\,m$ 2pt

algebra -1
math -½

Gen Chem II Lecture Spring 20 Dr. Hahn C section Form A Quiz 3 2/7 Friday Exam # _____

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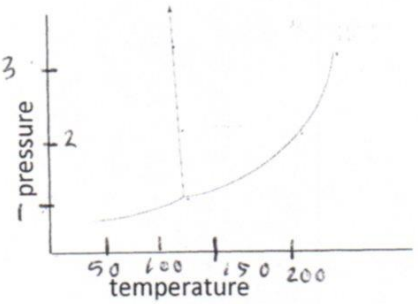
1. The temperature and pressure at which all three phases can coexist in equilibrium is (3 pts)



(a) 0.45 atm and 130°C (b) 1.25 atm and 300°C
(c) 0.25 atm and 110°C (d) 1.0 atm and 140°C

2. Which of the following forms a molecular solid ? (1 pt)
(a) C, graphite (b) $CaCl_2$ (c) $C_9H_8O_4$ (d) palladium

3. For the process of dissolving a solid in a liquid, which of the following statements is true ? (1 pt)
(a) ΔH_{soln} is either positive or negative and ΔS_{soln} is usually positive
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(b) NaF < $CH_3CH_2—O—CH_2CH_3$ < $CH_3CH_2CH_2CH_2—OH$ < $CH_3CH_2CH_2CH_3$
(c) $CH_3CH_2CH_2CH_3$ < $CH_3CH_2—O—CH_2CH_3$ < $CH_3CH_2CH_2CH_2—OH$ < NaF
(d) $CH_3CH_2CH_2CH_3$ < $CH_3CH_2—O—CH_2CH_3$ < NaF < $CH_3CH_2CH_2CH_2—OH$

5. What is the molarity (M) of a solution of 13.5 grams of $NaNO_3$ (FM = 85.0 g/mol) to make up 275.2 mL of the solution. (7 pts)

$13.5\ g \times \frac{mol}{85.0\ g} = 0.159\ mol$ (2 pt)

$275.2\ mL \times \frac{L}{1000\ mL} = 0.2752$ (2 pt)

$\frac{0.159\ mol}{0.2752\ L} = 0.578\ M$ (2 pt)

algebra -1
math -½

6. What is the mass percent of a solution of 7.82 grams of KCl (FM = 74.6 g/mol) in 100.7 grams of water ? (7 pts)

mass solution = 100.7 g + 7.82 g = 108.5 g (2 pt)

$\frac{7.82\ g\ KCl}{108.5\ g\ soln.} \times 100 = 7.21\%$ (2 pt)

(2 pt)

Gen Chem II Lecture Spring 20 Dr. Hahn C section Form B Quiz 3 2/7 Friday Exam # _____

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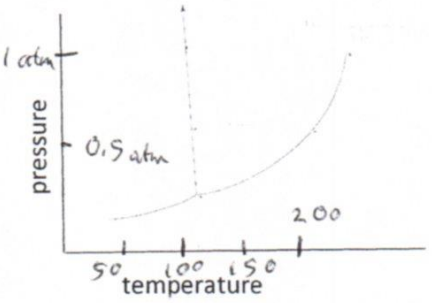

(a) 0.45 atm and 130°C (b) 1.25 atm and 300°C
(c) 0.25 atm and 110°C (d) 1.0 atm and 140°C

2. Which of the following compounds forms a covalent network solid ? (1 pt)
(a) Na (b) CS_2 (c) diamond (d) N_2

3. For the process of dissolving a solid in a liquid, which of the following statements is true ? (1 pt)
(a) ΔH_{soln} is always positive and ΔS_{soln} is usually negative.
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(d) $CH_3CH_2CH_2CH_3 < CH_3CH_2—O—CH_2CH_3 < CH_3CH_2CH_2CH_2—OH <$ NaF

5 What is the molarity of a solution of 5.26 grams of KCl (FM = 74.6 g/mol) to make up 125.7 mL of the solution. (7 pts)

$M = \frac{\#\ moles}{liter\ soln}$ algebra -1 math -1

$\#moles = \frac{5.26\ g}{74.6\ g/mol}$ 2pt

$\#moles = 0.0705$

$\#L = 125.7\ mL \times \frac{L}{1000\ mL} = 0.1257$ 2pt

$M = 0.0705 / 0.1257$ 2pt

6 What is the mole fraction of 2.54 moles of NaCl (FM = 58.5 g/mol) in 30.2 moles of water ? (7 pts)

$30.2 + 2.54 = 32.74\ moles$ 2pt

$X = \frac{2.54\ mol}{32.74\ mol} = 0.0776$ 2pt

$M = 0.561\ M$ 2pt

Gen Chem II Lecture Spring 20 Dr. Hahn A section Quiz 3 2/7 Friday Exam # 12

Name _____ Print Name _____

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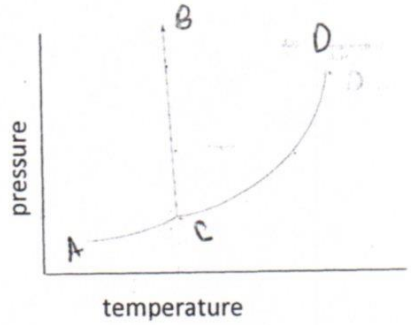

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Gen Chem II Lecture Spring 20 Dr. Hahn C section Form A Quiz 3 2/7 Friday Exam # E-1

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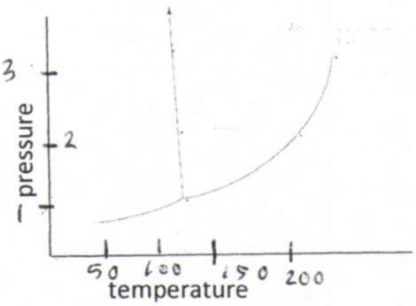

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Gen Chem II Lecture Spring 20 Dr. Hahn C section Form B Quiz 3 2/7 Friday Exam # 11

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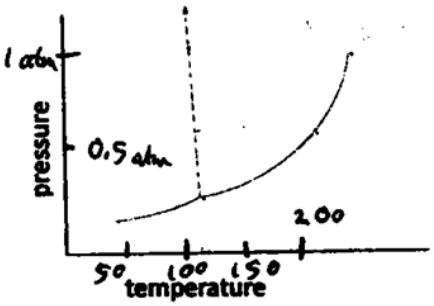

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