1.
◈ **STUDY CHECK**

Name the alkane with formula C_7H_{16} and give the formula for nonane.   Show work to get full credit

2. ◈ **STUDY CHECK**

Write down the condensed and expanded formulas for heptane.
Show work to get full credit

3. ◈ **STUDY CHECK**

Draw the skeletal formula of decane.
Show work to get full credit

4. ◈ **STUDY CHECK**

Write down the condensed structure and name the following cycloalkane:

$\triangleright$

Show work to get full credit

5. ◈ **STUDY CHECK**

Name the alkane with formula C_7H_{14} and give the formula for cyclononane.
Show work to get full credit

6. ◈ **STUDY CHECK**

Name the following hydrocarbon:

$$CH_3-CH_2-CH_2-CH_2-\overset{\overset{\displaystyle F}{|}}{\underset{\underset{\displaystyle F}{|}}{C}}-F$$

Show work to get full credit

7. ◈ **STUDY CHECK**

Name the following hydrocarbon:

$$CH_3CH_2CH_2-\overset{\overset{\displaystyle F}{|}}{\underset{\underset{\displaystyle F}{|}}{C}}-Br$$

Show work to get full credit

8. ◈ **STUDY CHECK**

Name the following hydrocarbon:

$$CH_3-\overset{\overset{\displaystyle CH_3}{|}}{\underset{\underset{\displaystyle F}{|}}{C}}-CH_2-I$$

Show work to get full credit

9. ◈ **STUDY CHECK**

Name the following hydrocarbon:

$$CH_3 - CH_2 - \underset{\underset{CH_2 - CH_2 - CH_3}{|}}{\overset{\overset{CH_2 - CH_2 - CH_2 - CH_3}{|}}{C}} - CH_3$$

Show work to get full credit

10. ◈ **STUDY CHECK**

Name the following hydrocarbon:

Show work to get full credit

11. ◈ **STUDY CHECK**

A solution is prepared by mixing 1g of glucose (MW=180g/mol) in 50g of water to give a final volume of 100mL. Calculate: (a) The percent by mass of solute (b) The mole fraction of solute (c) The molarity of the solution (d) The molality of the solution (e) The density of the solution

▶Answer: (a) 1.96% (b) 2×10^{-3} (c) 0.05M (d) 0.11m (e) 0.51g/mL

Show work to get full credit

12. ◈ **STUDY CHECK**

For a 0.11m glucose (MW=180g/mol) solution with density 0.51g/mL, calculate: (a) The percent by mass of solute (b) The mole fraction of solute (c) The molarity of the solution

▶Answer: (a) 1.76% (b) 1.78×10^{-3} (c) 0.05M

Show work to get full credit

13. ◈ **STUDY CHECK**

We prepare a solution by weighting 1g of solute and adding liquid until 100mL of solution in order to prepare a 2M solution. Calculate the molar mass of the solute.

▶Answer: 5g/mol

Show work to get full credit

14. ◈ **STUDY CHECK**

Break down the following chemicals into ions, if possible: $H_2O_{(l)}$, $NH_{3(l)}$, $AgNO_{3(aq)}$.

▶Answer: $H_2O_{(l)}$, $NH_{3(l)}$, $Ag^+_{(aq)}$, $NO_3^-{}_{(aq)}$.

Show work to get full credit

15. ◈ **STUDY CHECK**

The percent dissociation of a 0.1M weak electrolyte is 40%. Calculate the effective ion concentration.

▶Answer: 0.04M

Show work to get full credit

16. ◈ **STUDY CHECK**

For a solution of 5 g of NaCl (MW=58g/mol) in 100 g of acetic acid, CH_3COOH: (a) Calculate its molality (b) Given that the boiling point of acetic acid is 118°C, and that k_b = 3.08 °C/m, calculate the boiling point and the boiling point elevation of the solution. (c) Given that the freezing point of acetic acid is 17°C, and that k_f = 3.59 °C/m, calculate the freezing point and the freezing point depression of the solution.

▶Answer: (a) 50m (b) 123.3°C ; 5.29°C (c) 10.82°C ; -6.17°C

Show work to get full credit

17. ◈ **STUDY CHECK**

Calculate the vapor-pressure lowering of a 3m I_2 (MW=254g/mol) solution in cyclohexane at 279K given that the vapor pressure of cyclohexane at that temperature is 5.164kPa and the solution density is 1.3g/mL.

▶Answer: $\chi = 0.05$; $\Delta P_{vap} = -0.26 kPa$

Show work to get full credit

18. ◈ **STUDY CHECK**

The following two sets of data report the change in boiling point of a solution. Assess the date to calculate the boiling elevation constant, and if possible, calculate colligative constant and the boiling point of the pure solvent.

Set A		Set B	
T(°C)	m	T(°C)	m
17.02	1	817.21	1
15.21	2	14.42	2
11.10	3	11.63	3
7.65	4	8.84	4
6.05	5	6.05	5

▶Answer: Data set B, $k_f = 2.79°C$, $T_f^{solvent} = 20°C$

Show work to get full credit

19. ◈ **STUDY CHECK**

We prepare a 0.1M solution of a weak electrolyte with i=3. Given that the degree of dissociation of the electrolyte is 95%, calculate the osmotic pressure of the solution at 298K.

▶Answer: 7.23atm

Show work to get full credit

20. ◈ **STUDY CHECK**

We prepare a solution by adding 5g of solute–a non-electrolyte–into 50mL of water. The solution experience a boiling point elevation of 5.3°C. Given the boiling elevation constant of water, 1.86°C/m, calculate the molar mass of the solute. Mind the density of water is 1g/mL.

▶Answer: 35.09g/mol

Show work to get full credit