Chem 352, Fundamentals of Biochemistry Lecture 6 – Supplemental Questions

1. Based on their structures, classify each of the following lipids and describe their function:

$$\begin{array}{c} & \bigcirc \\ \text{CH}_2\,\text{O}-\text{C}-(\text{CH})_{14}-\text{CH}_3 \\ & \bigcirc \\ \text{CH}-\text{O}-\text{C}-(\text{CH})_{14}-\text{CH}_3 \\ & \bigcirc \\ & \bigcirc \\ \text{CH}_2\,\text{O}-\text{C}-(\text{CH})_{14}-\text{CH}_3 \end{array}$$

а

$$\begin{array}{c} O & CH_{3} \oplus \\ CH_{2}O-P-O-CH_{2}CH_{2}-N-CH_{2} \\ O \ominus & CH_{3} \\ O \\ CH-O-C-(CH)_{14}-CH_{3} \\ O \\ CH_{2}O-C-(CH)_{14}-CH_{3} \\ \end{array}$$

b.

HO d.

- a. Classification Function:
- b. Classification Function:
- c. Classification _____ Function:
- d. Classification _____ Function:
- e. Classification Function:

2.	The nutritional labelling on foods indicates among other things the quantity of saturated and unsaturated fats. Describe how these differ, both chemically and physically from one another
3.	Draw the structure for a triacylglycerol formed from two stearic acids (18:0) and one palmitoleic acid (16:1 $cis\Delta^9$).
4.	Describe three different ways in which material can move one side of biological membrane to the other. a.
	b.
	c.

5. If the pH of the intermembrane space in a mitochondrium is 6.5 compared to the matrix, which is 7.4, and the membrane potential of the inner membrane is 60 mV (Ψ_{out} - Ψ_{in}), What is the change in the free energy (in kJ) for a mole of protons moving through the ATP Synthase complex at 37°C ?