* Memorize saturated fatty acids

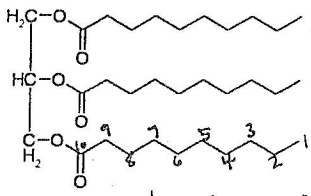
HOMEWORK # 9

CHEM 121, section 1
Background for the Chapter. 19. Lipids
Homework

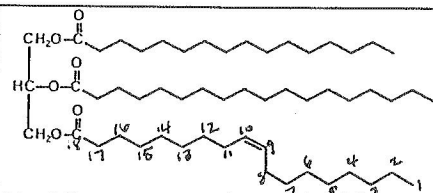
Printed Name: Key

Group Name: _____

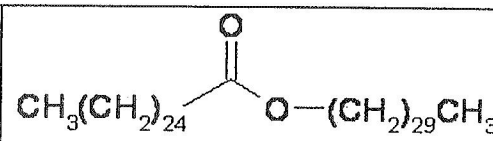
1) (3 pts) Give names of the following types of lipids.



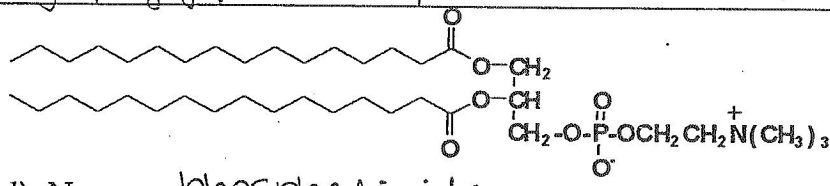
a) Name: triglyceride / trycaproylglyceride



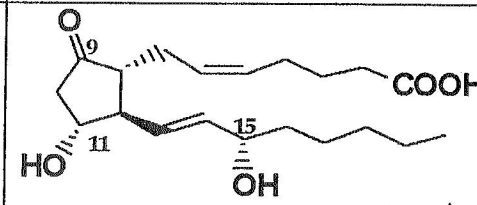
b) Name: unsaturated triglyceride; palmitoy oleoe stearoye triglyceride



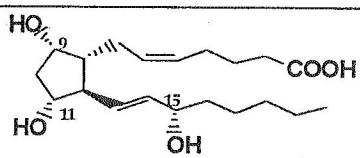
c) Name: wax



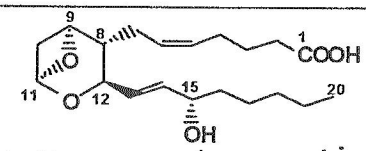
d) Name: phospholipids



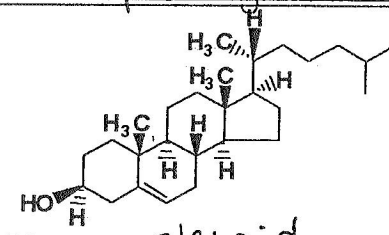
e) Name: prostoglandin (PG)



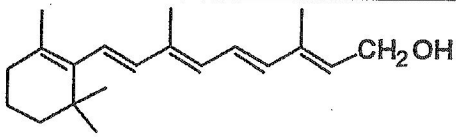
f) Name: prostoglandin (PG)



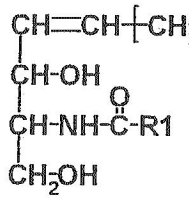
g) Name: prostoglandin (PG)



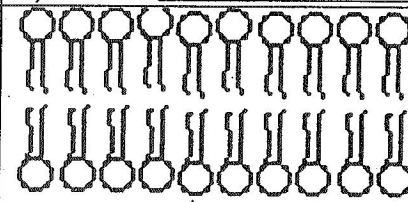
h) Name: steroid



i) Name: Vitamin A



j) Name: spingosine



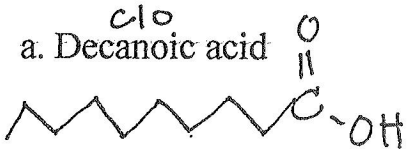
k) Name: phospholipid bilayer

2) (3 pts) Give the type, structure notation and names of the following fatty acids.

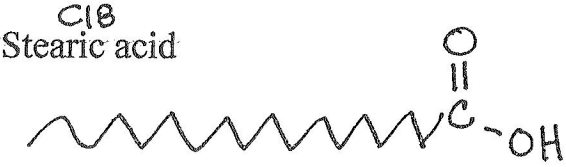
$CH_3(CH_2)_{10}CO_2H$ a) SFA Lauric	$CH_3(CH_2)_{18}CO_2H$ a) SFA arachitic acid	$CH_3(CH_2)_{16}CO_2H$ a) SFA Stearic acid	$CH_3(CH_2)_{14}CO_2H$ a) SFA palmitic acid
$CH_3(CH_2)_5CH{=}CH(CH_2)_7CO_2H$ a) MUFA C(16:1)9 w7 palmitoleic acid	$CH_3(CH_2CH{=}CH)_3(CH_2)_7CO_2H$ C-18 a) PUFA (C18:3)9 w3 α-linolic acid	$CH_3(CH_2)_7CH{=}CH(CH_2)_7CO_2H$ a) MUFA (18:1)9 w9 oleic acid	

3) (3 pts) Draw the condensed structures of each of the following fatty acids:

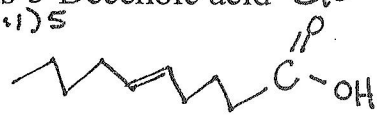
a. Decanoic acid C10



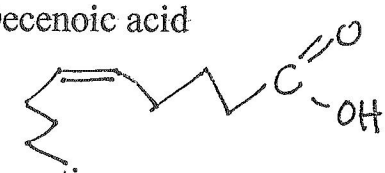
b. Stearic acid C18



c. trans-5-Decenoic acid C10 (10:1)5



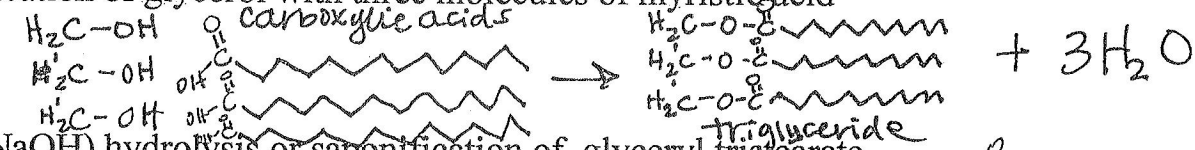
d. cis-5-Decenoic acid



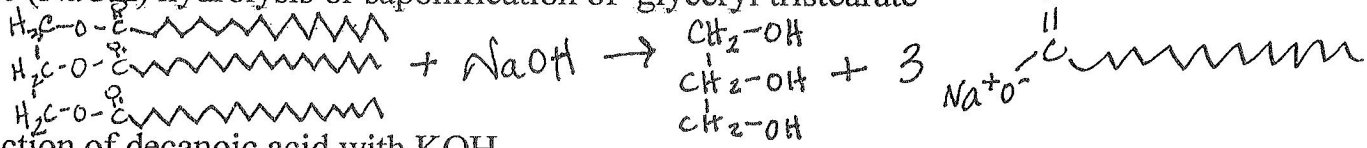
*low melting pt

4) (3 pts)Write an equation for each of the following reactions:

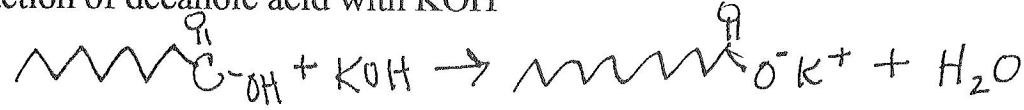
a) Esterification of glycerol with three molecules of myristic acid



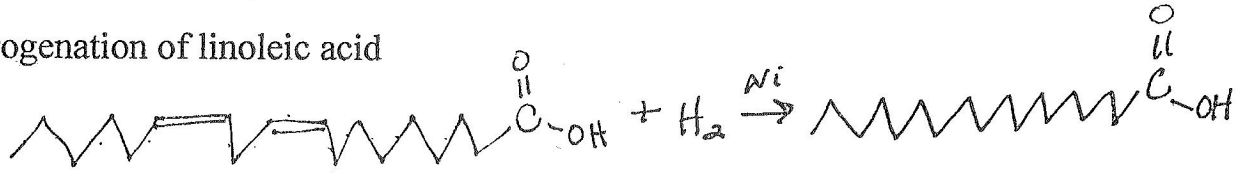
b) Base (NaOH) hydrolysis or saponification of glyceryl tristearate



c) Reaction of decanoic acid with KOH



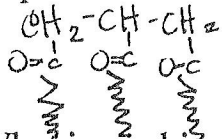
d) Hydrogenation of linoleic acid



5) (2 pts) What are the structural differences between triglycerides (triacylglycerols) and phospholipids? Where they are found in living organisms?

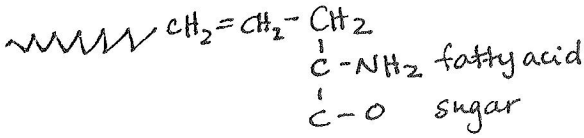
triglyceride

3 fatty acids + 1 glycerol molecule



phospholipids: 2 fatty acids, 1 phosphate group, + 1 amine group

6) (2 pts) What is a sphingolipid? Draw an example.



modified glycerol-amine
sugar
fatty acid

7) (2 pts) What is a steroid? What are their applications?

anabolic steroids, growth hormones, sex hormones; modification of cholesterol

8) (2 pts) What are the two major types of fat substitutes and how they work?

the substances that taste like fats are not actually digested by the body so you don't put on weight