BIOSCI 1820
Quiz #5
MAR 2002

I. Choose the Structure or Name that best matches the terms on the left:

_____ facilitates pancreatic lipase

_____ carnitine acyltransferase

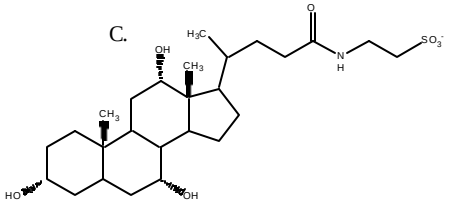
_____ odd-number chain fatty acid breakdown

_____ fatty acid synthase

A. vitamin B12

B. vitamin A

C.



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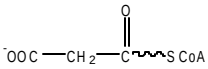

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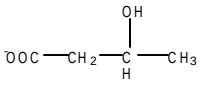

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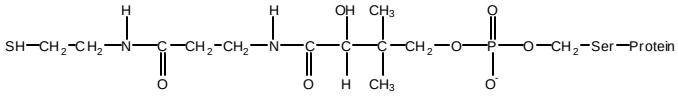


II. Multiple Choice (circle the correct choice):

A. Which of the following is activated when cholesterol levels in the cell rise?

1. HMG-CoA reductase
2. Acyl-CoA:cholesterol acyltransferase
3. Synthesis of new LDL-receptors
4. None of the above (all of them decrease)

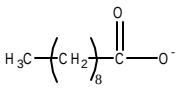
B. All of the following represent mechanisms used to distinguish the fatty acid synthesis pathway from the fatty acid β-oxidation pathway, except:

1. Different compartments are used (cytosol vs. the mitochondria)
2. Intermediates are differentially tagged with CMP vs CoA
3. The co-factors to transfer reducing equivalents within the two pathways are unique
4. Unique enzymatic reactions exist in each pathway
5. None of the above

C. The effect of insulin on liver cells is profound. Which of the following statements is incorrect?

1. Carnitine acyltransferase is inhibited
2. Glycolysis is inhibited
3. Pyruvate dehydrogenase activity is increased
4. There is an increase in glucose uptake into cells
5. None of the above

III. In theory, how many ATPs could be generated from the complete oxidation of the following fatty acid in the mitochondria via β-oxidation pathway? Please show your work and indicate your assumptions.



IV. Short Answer:

A. What is the name of the enzyme in the fatty acid synthesis pathway that utilizes biotin as a co-factor?

_____

B. To which protein does the LDL receptor bind on LDL particles

_____

V. Draw the structures of the products of the following reactions: