Topic 16. Lipid Anabolism. Fatty Acids and Triacylglycerol Synthesis. Regulation of these processes.

Theoretical questions:

1. Fatty Acids Synthesis, its role in metabolism.

1.1. Metabolic sources of Acetyl- CoA, its transport across the mitochondrial membrane into the cytoplasm.

1.2. Reactions of Malonyl-CoA formation, the role of Acetyl-CoA Carboxylase, regulation of the process.

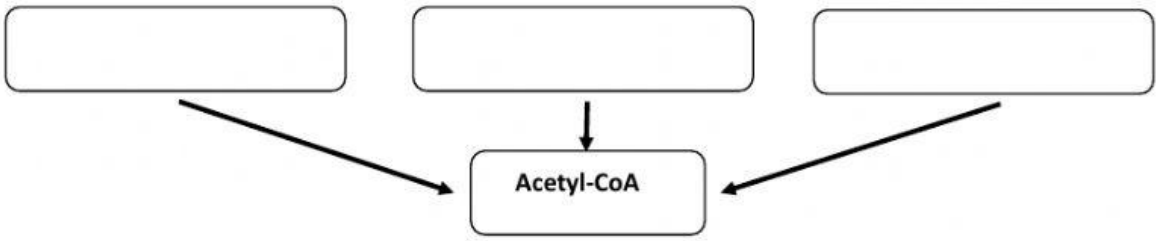
1.3. Reactions of Fatty Acid Synthesis. The role of Fatty Acid Synthase, the role and sources of NADPH2.

2. Synthesis of Triacylglycerols, metabolic ways of Glycerol-3-Phosphate formation. Reactions of triacylglycerol synthesis from glycerol-3-phosphate.

Study Questions and Tasks

1. Fatty Acids Synthesis.

1.1.Metabolic sources of Acetyl- CoA

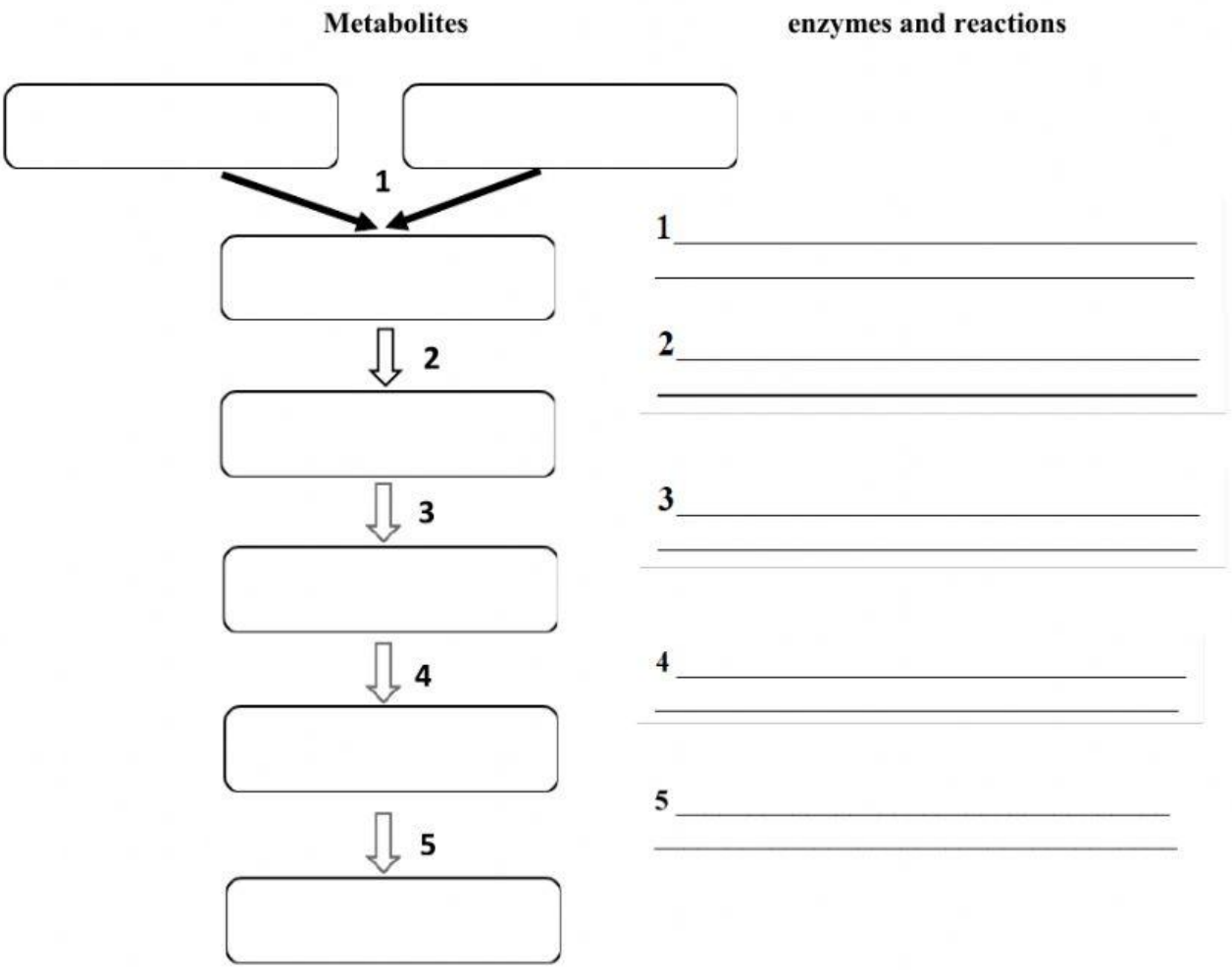


1.2.Acetyl-CoA transport across the mitochondrial membrane into the cytoplasm. Draw a scheme:

1.3.Reaction of Malonyl-CoA formation:

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1.4.Reactions of Fatty Acid Synthesis inside of fatty acid synthase (FAS) till butyryl-FAS:



2. Synthesis of Triacylglycerols

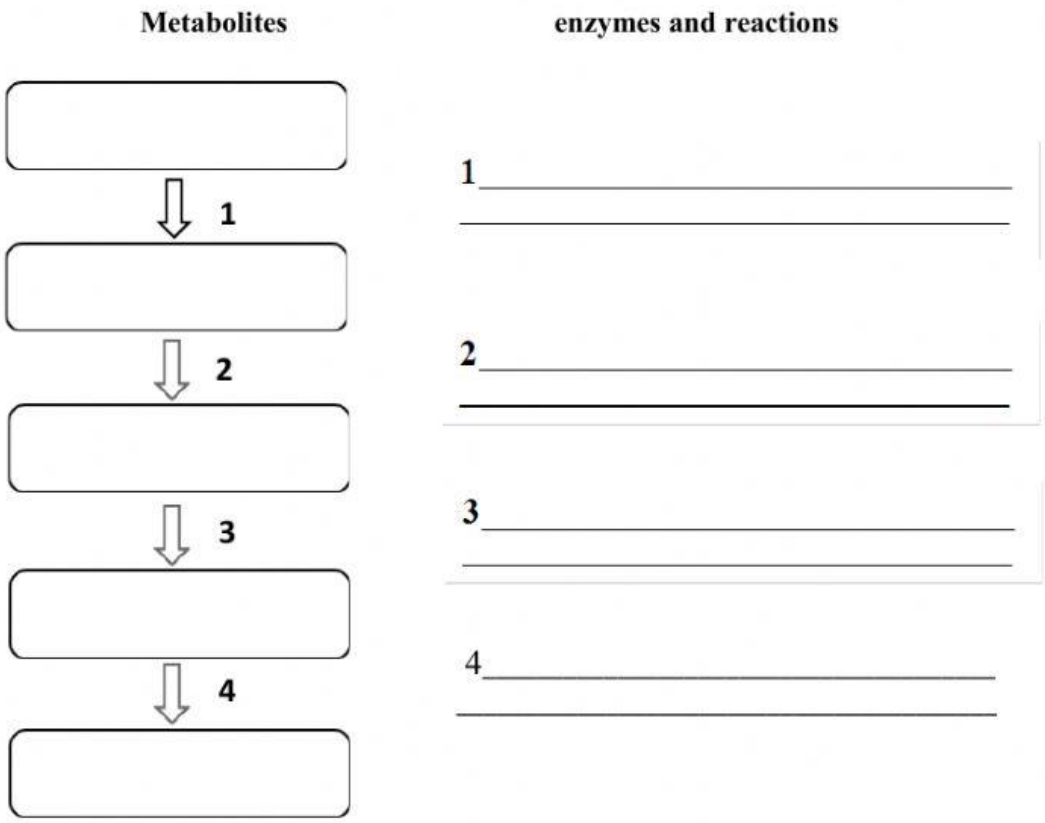
2.1.Metabolic ways of Glycerol-3-Phosphate formation:

A. In the liver:

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B. In the fatty tissue:

2.2.Synthesis of Triacylglycerols from Glycerol-3-Phosphate:



Sites for additional information:

https://www.wiley.com/college/boyer/0470003790/animations/animations.htm

https://www.wpunj.edu/sec/vsec/science_courses/biochem/

Text-books:

1. Biochemistry 5th Edition Ch.23, pp.307-320.
2. Prasad textbook of biochemistry OCR. Topic 27. pp. 503-514.

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