Topic 10. Glucose metabolism. Digestion of carbohydrates. Glycolysis. Aerobic and anaerobic oxidation of glucose.

Theoretical questions:

1. Digestion of carbohydrates.
2. Glycolysis.
   2.1. Localization and role of Glycolysis.
   2.2. Reactions, enzymes.
   2.3. Reactions connected to synthesis of ATP.
   2.4. Next steps of pyruvate catabolism, connection with common steps of catabolism.
   2.5. Glycolytic oxydoreduction during anaerobic oxidation of glucose. Role of LDH.
3. The Malate Aspartate and Glycerol Phosphate Shuttles, their role.
4. The energy balance of complete aerobic cleavage of glucose to CO_2 and water.
5. The role of aerobic glucose breakdown for the brain.

Study Questions and Tasks

1. Digestion of carbohydrates

	Digestive Tract	Substrates	Enzymes	Products
1	In the Mouth			
2	In the Stomach			
3	In the Small Intestine			
4	In the Large Intestine			

2. Glycolysis

2.1.Definition_____

_____

_____

_____

2.2. Biochemical role and localization:

_____

_____

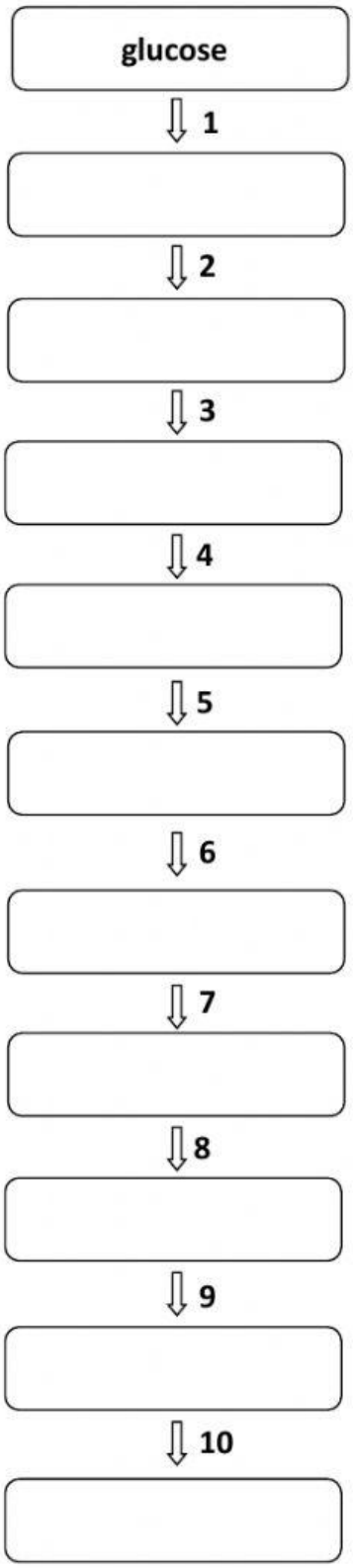
_____

LIVEWORKSHEETS

2.3. Scheme

Metabolites

Enzymes and reactions



1_____

2_____

3_____

4_____

5_____

6_____

7_____

8_____

9_____

10_____

LIVEWORKSHEETS

2.4. Write down the reactions of anaerobic glycolysis.

1. Reaction of phosphorylation

2.

3.

4.

5.

6.

7.

LIVEWORKSHEETS

8.

9.

10.

11.

2.5. The energy balance of anaerobic and complete aerobic cleavage of glucose to CO_2 and water.

	Anaerobic glycolysis	**Aerobic glycolysis**
Number of ATP		

3. Regulation of glycolysis. Regulatory enzymes of glycolysis, their effectors.

_____
_____
_____
_____

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.7, pp.86-88, Ch.8, pp.91-108.
2. Prasad textbook of biochemistry OCR. Topic 9, pp. 156-161, Topic 10, pp. 172-179.

LIVEWORKSHEETS