I. Introduction to biochemistry. Biochemical components of cell

Topic 1. Introduction to Biochemistry. Structures and functions of main biomolecules. Common catabolic pathways of proteins, carbohydrates, and lipids.

Theoretical questions:

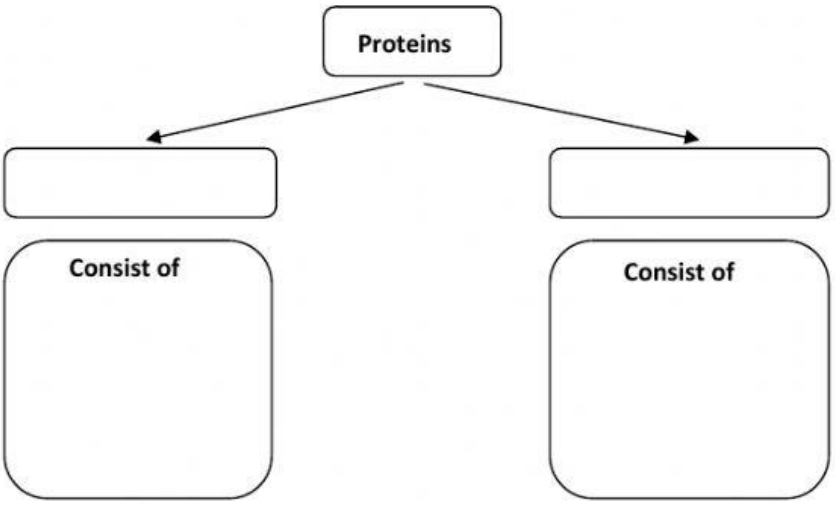
1. The families of biological molecules:
   1.1. Amino acids and their polymers: peptides and **proteins**.
   1.2. **Carbohydrates**: biological roles. Classification: mono-, oligo- and polysaccharides. Main examples.
   1.3. **Lipids**: General characteristics, classification. Their biological roles.
   1.4. General characteristics of **nucleic acids**. Types of nucleic acids, their location and functions in the cell.
2. Introduction to metabolism: catabolism and anabolism.
3. Common pathways of catabolism of proteins, carbohydrates, lipids.

Study Questions and Tasks

1. **Composition of main biomolecules**

	Main Biomolecules	Main Components
1.	**Proteins**	
2.	**Carbohydrates**	
3.	**Lipids**	
4.	**Nucleic Acids**	

2. **Classification of proteins according to their chemical composition**



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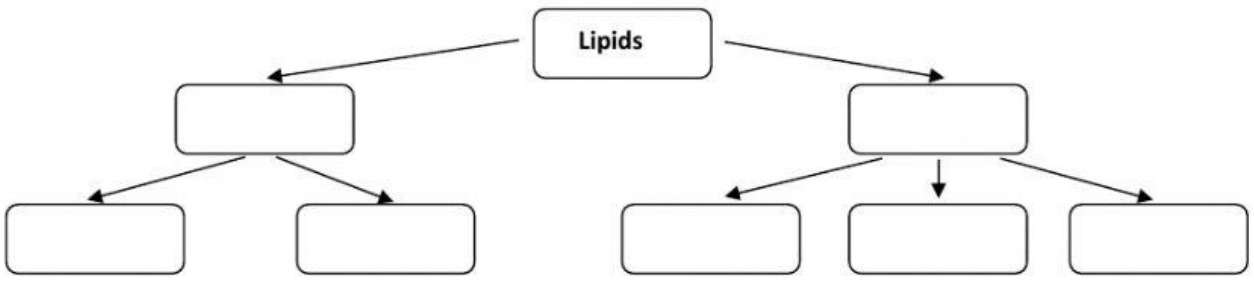
3. Classification and functions of complex (conjugated) proteins.

Conjugated proteins	Main Components	Functions
Glycoproteins		
Lipoproteins		
Nucleoproteins		
Phosphoproteins		
Hemoproteins		
Flavoproteins		
Metalloproteins		

4. Classification, composition and functions of carbohydrates.

	Main examples	Functions
Monosaccharides		
Disaccharides		
Polysaccharides		

5. Classification of lipids.



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6. Classification, structure and functions of nucleic acids.

Types	Structure of nucleotides	Functions
Deoxyribonucleic acid **(DNA)**	nitrogenous bases: pentose: +	
Ribonucleic acid **(RNA)**	nitrogenous bases: pentose: +	

7. Give the definitions.

Metabolism is _____
_____
_____
_____

Catabolism is _____
_____
_____
_____

Anabolism is _____
_____
_____
_____

8. Write down sequences of complete catabolic pathways of:

a) glucose

_____
_____

b) lipids

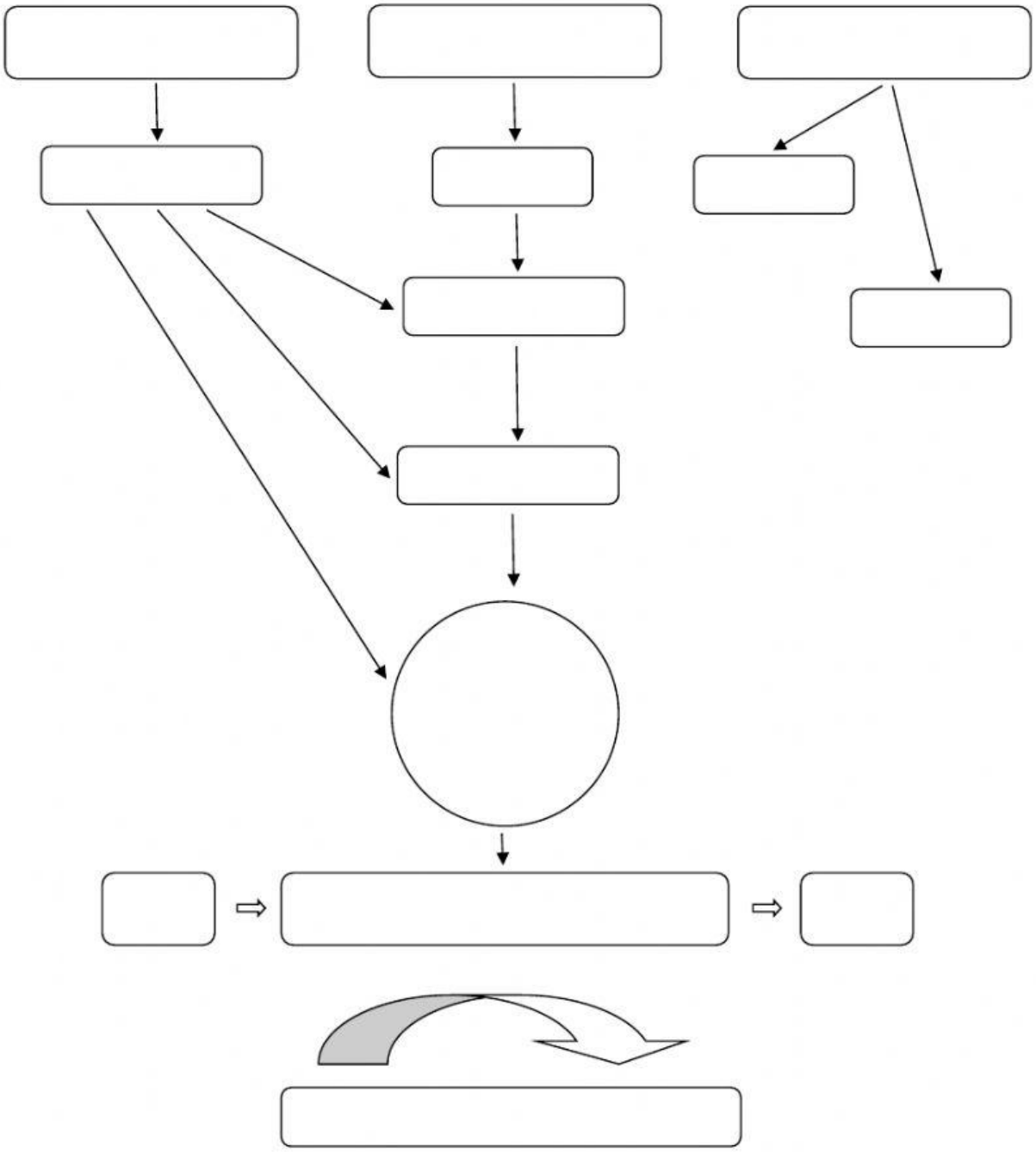
_____
_____

c) proteins

_____
_____

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9. Common pathways of catabolism



Text-books:

1. Biochemistry 5th Edition Ch.1, Ch.7, Ch.15, Ch.29.
2. Prasad textbook of biochemistry OCR. Ch.3,4,5,6, pp.32-116.

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