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MULTIPLE CHOICE QUESTIONS WITH EXPLANATIONS
FOR PHARMACY FACULTY STUDENTS

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CONTENT

PREFACE

Textbook "Biological chemistry. Multiple choice questions with explanations for pharmacy faculty students " is primarily intended to solve an important and urgent task, i.e. quick and efficient preparation for a comprehensive independent assessment of qualification characteristics, the USQE-1 (which includes the discipline of "Biological Chemistry"), one of the effective means of the objective assessment of the knowledge, skills and abilities of future pharmacists in Ukraine.

The textbook summarizes and systematizes the most important materials of the curriculum of the "Biological Chemistry" discipline and emphasizes scientific data contained in the tests for the USQE-1 in this discipline for the students of specialty 226 "Pharmacy, Industrial Pharmacy".

This textbook contains more than 280 tests of format A and, as an addition to the basic textbook, optimizes the preparation for practical classes, workshops, intermediate and final control tests in the discipline of "Biological Chemistry", promotes successful studies of the discipline,

develops independence and a skill of reasoning and, as a result, forms a competency-based approach in the application of knowledge in modern pharmacy.

SEMANTIC MODULE 1.

INTRODUCTION TO BIOCHEMISTRY. SIMPLE AND COMPLEX PROTEINS

	MCQ	EXPLANATION
1.01	To the membrane proteins that contact with this or that biologically active substance transmitting information into the cell belong: **A. * Receptor proteins** **B.** Pump proteins **C.** Enzyme proteins **D.** Channel proteins **E.** Glycocalix	There are few types of protein classifications, issued from their chemical nature, function, nutritional importance etc. Depending on **function**, performed by proteins in the human body, they are classified into: 1. **Structural proteins** (collagen, keratin etc.) 2. **Catalytic proteins**, or enzymes (trypsin, lactate dehydrogenase etc) 3. **Hormonal proteins** (growth hormone, insulin, glycagon etc.) 4. **Transport proteins** (serum albumin hemoglobin, transferrin etc) 5. **Contractile proteins** (actin, myosin) 6. **Genetic proteins** (nucleoproteins) 7. **Protective proteins** (immunoglobulins) 8. **Receptor proteins** are imbedded in the cell membrane and contact with biologically active substances (hormones, viruses

	MCQ	EXPLANATION
		etc) transmitting information into the cell from outside.
1.02	The given reaction is called: $C_6H_{12}O_6 \xrightarrow{enzymes} 2C_2H_5OH + 2CO_2$? **A. * Alcohol fermentation of glucose** **B.** Glucose hydrolysis **C.** Glucose oxidation **D.** Lactic-acid fermentation of glucose **E.** Glucose reduction	Alcohol (ethanol) fermentation is a biological process of energy production by sugar (as glucose, fructose, and sucrose) conversion into ethanol and carbon dioxide. First time the word **enzyme** (from *greek "en zyme"* - "in yeast") was used in 1878 to describe this process while this type of catalysis was noticed.
1.03	Enzymes are widely used as drugs in pharmacy. What is the main difference that separates enzymes from non-biological catalysts? **A. * High specificity and selectivity** **B.** High universality **C.** Low universality **D.** High dispersion **E.** High homogeneity	Specificity is an ability of enzyme to bind clearly defined substrate. That is provided by complementary structure (charge, shape etc) of active site of enzyme and substrate and comes from their unique three-dimentional form. Because of chemoselectivity, regioselectivity and stereospecificity enzymes can catalise individual steps of metabolic pathways.
1.04	Enzymes (biological catalysts) are used as pharmacologic preparations. What is the mechanism of enzyme action in the biochemical reactions?	The activation energy is one that required by the reactants to undergo the catalytic process. Attainment of the activation energy by reactants is coupled with heating. Since reduction of the activation energy is provided

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