

Essay

\$\$\$001

Effectiveness of using PISA tasks in biology lessons

\$\$\$002

The effectiveness of methods for generalizing students' knowledge in biology lessons

\$\$\$003

The use of V. F. Shatalov's teaching methods with reference drawings in a biology lesson

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Effective methods for the formation of educational cognitive competencies of students

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Improving Student Creative Skills in BTEM-Based Biology Teaching

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Methodological features of teaching the section "Diversity, structure and functions of living organisms"

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The problem of implementing modeling technology in biology lessons

\$\$\$008

Pedagogical technology of differentiated level of education

\$\$\$009

The use of digital technologies in teaching biology

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The use of conversational level in teaching biology in the framework of the updated program

\$\$\$011

Advantages and disadvantages of using genetic engineering methods

\$\$\$012

Gene expression. Optimization of gene expression

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Advances in molecular diagnostics

\$\$\$014

The future of practical application of PCR diagnostics

\$\$\$015

Molecular features of the genome of eukaryotes and prokaryotes

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Vaccines and biological products based on microorganisms

\$\$\$017

Conditions for microclonal cultivation of plants

\$\$\$018

Modern problems of biotechnology

\$\$\$019

Prerequisites of ecobiotechnology and nature protection

\$\$\$020

GMO and GMO products. Biosafety issues

Questions

###001

Methods of teaching biology-science and academic discipline. Forms of teaching biology

###002

Didactic principles in the methodology of teaching biology. Selected (elective) courses in biology

###003

Assessment of students' academic achievements in the process of teaching biology

###005

Interactive assessment platforms

###006

Signs of pedagogical technology

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The formative assessment process

###008

Blended and e-learning

###009

Interactive learning platforms

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The process of differentiated learning

###011

Critical thinking in learning

###012

Competencies of a modern teacher

###013

Comparison of formative and summative assessment

###014

The material base of the biology cabinet

###015

The cumulative assessment process

###016

Mutation. Mutation types. Types of gene mutations and their causes

###017

Genetics of prokaryotes. Genetic recombination

###018

Genetic recombination. Transduction. General and actual transduction

###019

Chemical mutagenesis. Features of the mutagenic action of chemical agents

###020

Cytological bases of heredity. Cell division and self-production

###021

Mitotic cycle and phases of mitosis

###022

The structure of chromosomes: chromatide, heterochromatin and euchromatin regions of the chromosome, chromomeres, chromocenters

###023

The main laws of heredity of signs and principles of heredity

###024

Inheritance in dihybrid hybridization. Separation by genotype and phenotype in dihybrid hybridization

###025

That DNA is the keeper of the hereditary message

###026

Bioenergetics. Autotrophs and heterotrophs. The main energy substrates of the cell.

###027

The molecular basis of heredity

###028

Karyotype. Number and morphological features of chromosomes

###029

Meiosis and gamete formation. Phases and stages of meiosis

###030

Variability. Phenotypic and genotypic variability

###031

The emergence of various areas of microbiology: by objects of study (bacteriology, mycology, parasitology, virology)

###032

Factors affecting microorganisms. The influence of physical factors on microorganisms

###033

Factors affecting microorganisms. Influence of chemical factors on microorganisms

###034

Microbiological research methods. The order of work in microbiological laboratories

###035

Types of relationships between microorganisms and high-stage organisms: (neutralism, commensalism, mutualism, parasitism)

###036

Factors affecting microorganisms: the influence of anthropogenic factors on the structure of microbiocenosis

###037

The role of microorganisms in the cycle of substances in nature: the processes of transportation of phosphorus-containing substances

###038

Genetics of microorganisms: biological function of plasmids, integration in chromosomes

###039

The world of microorganisms, common characteristics and diversity: prokaryotic and eukaryotic microorganisms, their differences

###040

Methods of molecular biology. Physical and chemical methods

###041

The structure of proteins.

Amino acid composition of proteins. Polar and non-polar amino acids

###042

Replication. Basic principles and types of DNA replication. Understanding the Replicon

###043

Transcription. Transcription mechanisms in Pro- and eukaryotes

###044

Structure and organization of the prokaryotic genome. The structure of the prokaryotic genome

###045

Structure and organization of the prokaryotic genome. Organization of the prokaryotic genome (E. coli as an example)

###046

The structure and organization of the eukaryotic genome. Quantitative features of the eukaryotic genome

###047

Membrane structures. Principles of structure. Lipids and membrane proteins

###048

Intermolecular interactions and their role in the functioning of living systems

###049

Genetically modified animals and plants

###050

The cell cycle. Cell cycle and phases of mitosis

###001

Planning the class environment based on the technology of group learning for the following learning objectives: 7.1.7.1-comparison of the types of the nervous system of animals

###002

Planning the learning environment based on STEM educational technologies for the following learning objectives: 7.1.6.2-explaining the effect of light on plant development

###003

Drawing up a formative assessment task for the learning objective presented below: 8.3.2.3 explaining the causes of environmental problems in the territory of Kazakhstan and ways to solve them

###004

Compilation of a formative assessment task according to the learning goal given below: 9.2.2.2 description of the stages of mitosis

###005

Preparation of an informative assessment task for the educational goal set below: 11.3.2.1-forecasting the possible consequences of global climate warming

###006

Compilation of a formative assessment task for the learning goal given below: 9.2.4.9-description of the main methods for studying human genetics

###007

Drawing up a formative assessment task for the learning goal given below: 10.1.3.3 - explanation of the mechanism of passive transport

###008

Drawing up a formative assessment task for the learning goal given below: 7.1.4.1-description of respiratory significance in living organisms

###009

Planning the lesson environment using one method/approach/strategy for the following learning objectives: 8.1.3.9 establishing the relationship between vessel wall construction and their function

###010

Planning the start of classes according to the following learning objectives: 9.1.3.1 comparison of active and passive transport

###011

Planning the lesson environment using one method/approach/strategy for the following learning objective: 11.1.3.3-explaining the mechanisms of different types of transport of substances across the cell membrane

###012

Planning the environment of the lesson in the form of paired learning according to the following learning objective: 9.2.5.3 - description of the driving forces of evolution

###014

Planning the lesson environment using one method/approach/strategy for the following learning objective: 8.2.1.1 comparison of animal breeding methods

###015

Planning of the lesson environment in the form of pair training for the following educational purposes: 8.2.3.1 description of the stages of embryonic development

###016

Drawing up a formative assessment task for the learning goal given below: 9.3.2.3 explaining the impact of the greenhouse effect on living organisms

###017

Compilation of a formative assessment task for the following learning goal: 7.1.1.3 description of the structural features of vertebrates and invertebrates

###018

Planning the lesson environment based on the technology of critical thinking for the following learning objectives: 10.1.7.3-study of the structure and functions of the spinal cord and brain

###019

Planning the lesson environment for the following learning objective based on critical thinking technology: 10.1.6.2 - explanation of the mechanism of muscle contraction

###020

Planning the classroom environment based on CLIL technology for the following learning objectives: 7.1.1.3 description of the structural features of vertebrates and invertebrates

###021

The law of independent inheritance of genes. Statistical nature of assortment. The general formula for disunity in an independent assortment

###022

Non-allelic interactions: complementarity, epistasis, polymerization

###023

Discovery of the phenomenon of heredity. In the study of heredity. Merging Inheritance Features

###024

Merge groups. Cytological basis of obstetrics

###025

Genetic maps are the principles of their creation in eukaryotes. Use of cytogenetic data for gene localization

###026

Formation and biological functions of biogenic amines. Deactivation of biogenic amines.

###027

Gene mutations. The occurrence of gene mutations is a general characteristic of a molecular nature: base displacement, omission or base fusion

###028

Autopolyploidy. Meiosis in autopolyploids. Genetic analysis of autopolyploids

###029

Allopolyploidy. Meiosis and inheritance in allopolyploidy

###030

Polyploid rows. The role of polyploidy in evolution and breeding

###031

Fermentation. General understanding of the opening process. Lactic acid fermentation. A variety of microorganisms that carry out the process of lactic acid fermentation

###032

Growth of microorganisms. Methods for determining growth. Growth curve and phases

###033

Types of bacterial differentiation: dormant forms (endospores, cysts, akinetes)

###034

Industrial biotechnology. Application of prokaryotes as a form of biotechnology

###035

Biogas production. Importance of anaerobic microorganisms in biogas production

###036

Biotechnological processes. The use of biological methods in the treatment of industrial and domestic wastewater

###037

Enzymes produced by microorganisms. Microorganisms used in the production of enzyme preparations and their characteristics

###038

Obtaining proteins by biotechnological means

###039

Ecological biotechnology and its achievements

###040

Production of amino acids. The value of the amino acid and its fields of application

###042

Protein-lipid interaction and biological formation membranes

###043

Bioinformatics

###044

Genetic Engineering. Genetic engineering and security issues

###045

Protein-nucleic acid interactions in the process of regulation of genome activity, during self-assembly of intercellular structures, viruses and phages

###046

Cell division. Mitosis. Meiosis or reductive division

###047

Intercellular and intracellular signals and membrane receptors

###048

Heterogeneity of eukaryotic DNA in nucleotide composition

###049

Mobile genetic elements of prokaryotes: IS-elements, transposons

###050

Variety of viral genomes. DNA and RNA containing viruses

###001

According to Mercer's research, discourse is an integral part of student learning. There are three different types of conversations in which subjects participate. What types of stories exist in reading?

###002

Intelligent technology. The importance and effectiveness of intelligent technologies in teaching biology. Support intelligent technology once you speak your mind

###003

Why is it said that biological knowledge can be represented by concepts? When and by whom was the theory of the development of biological concepts created?

###004

What learning goals should be set in a biology lesson? Why in modern conditions is great importance attached to the compilation of high-level tasks of the lesson?

###005

Design an experiment for the following learning objective: (M) Determine the number of chromosomes in different organisms

###006

Schedule a lab lesson for the following learning purpose: (D) Cheese/yogurt making

###008

Schedule a laboratory lesson for the following learning purpose: DEC Study of respiration in plants

###009

Planning a laboratory session for the following learning objective: DCP, DEC Definition of hearing loss

###010

Plan a laboratory lesson for the following educational purpose: (M) A comparative description of the respiratory system of insects, fish and humans

###011

Planning a laboratory session for the following educational purpose: (D) studying the biological properties of water

###012

Preparation of formative assessment tasks on these topics according to the updated standard curriculum of the subject "Diversity of living organisms. Biosphere and ecosystems"

###013

Drawing up a plan in accordance with the educational objectives of the subject "Cell Biology" according to the standard curriculum of updated content on the subject "Biology", setting tasks of formative control on these subjects

###014

Creation of a plan in accordance with the objectives of training on the topic "Transport of substances" according to the standard curriculum of the subject "Biology" with updated content, tasks for formative assessment on these topics

###015

Creation of a plan in accordance with the educational goals of the Department of Molecular Biology according to the updated content of the standard curriculum on the subject of Biology, preparation of tasks for formative and summative assessment on these topics

###016

Drawing up a short-term plan in accordance with the objectives of training in the section "Reproduction" on the subject "Biology"

###017

Plan an experiment for the following educational purpose: (D) To study the presence of various pigments in plants

###018

Design an experiment for the following learning purpose: (D) Investigate the semipermeability of a membrane using the example of a dialysis tube

###019

Plan an experiment for the following educational purpose: (D) Studying different forms of bacteria

###020

Planning a laboratory lesson on the following educational tasks: PREP, DEK The influence of various factors on the photosynthesis process (intensity of light waves)

###021

Environmental mutagens and methods for their study. Test systems and genetic activity testing systems

###022

Hereditary variables N. I. Vavilov, the law of homological series. The Significance of the Inherited Variability of Organisms for the Process of Selection and Evolution

###023

Adaptive nature of modifications. Morphoses. Hereditary variability. The fact that the severity of the action of genes changes during the implementation of the genotype due to various environmental conditions

###024

Molecular biology of the gene. Non-repeating and repeating sequences in DNA

###025

Replication. Replicon. Features of replication and organization of eukaryotic chromosomes

###026

The structure of chromosomes. Changes in the morphological organization of chromosomes during mitosis and meiosis.

###027

Population and its genetic structure. Hardy-Weinberg law, its application. Genetic heterogeneity of populations

###029

Ontogenetic variability of chromosomes. Replication of chromosomes. Polyteny

###030

The law of purity of gametes. Homozygosity and heterozygosity

###031

Lactic acid bacteria, their distribution and relationships with other microorganisms. The use of lactic acid bacteria in the dairy industry, bread production, biological preservation, meat and fish industry, production of lactic acid and dextrans

###032

Polysaccharides. Conditions for the growth of microorganisms. Industrial production and use of microbial polysaccharides

###033

Lipids. lipid producers. Industrial production and practical use of lipids

###034

Application of microbial enzymes in food, textile industry, agriculture, medicine, organic synthesis

###035

Enzymes. Features of enzymes of microorganisms. Enzymes of microorganisms used in production

###036

Bioremediation. The role of microorganisms in the restoration of degraded soils

###037

Purification of water and ponds. Purification of water contaminated with oil and petroleum products with the help of microorganisms

###038

Biological leaching. Microorganisms important for hydrometallurgy. New directions of development of biogeotechnology of metals

###039

Protein intake. The process and principles of controlling the growth of microorganisms. The main types of raw materials and microorganisms used (plant hydrolysates, hydrocarbons, new types of raw materials)

###040

Taking antibiotics in production conditions. Antibiotics produced by bacteria, actinomycetes, mycelial fungi. The use of antibiotics in medicine, agriculture, food industry

###041

Monoclonal antibody production technology (hybrid)

###042

Methods for treating plants from viral diseases

###043

Rules of work in biotechnological laboratories, ethical issues

###044

Biotechnological processes: principles of systematic and phased implementation

###045

The main directions and tasks of cellular biotechnology

###046

Problems of cloning and gene expression

###047

DNA repair and crossing over

###048

Features of eukaryotic chromosome replication

###049

Translation. Translation mechanisms (protein biosynthesis)

###050

Physical and chemical properties of proteins. The shape of protein molecules and methods for studying it