

Faculty of Ecology and Soil Science
Specialty Ecology, Subject "Basics of geographical ecology"
State Exam questions 2020/21

Light

1. The composition and cycle of water and its eco-geographic changes.
2. The role of eco-geographic science in stable development
3. Climate significance and eco-geographic problems related to climate
4. Eco-geographic aspects of the use of resources of the Earth's crust
5. Eco-geographical aspects and dependencies of men's spread from nature
6. The point of the World Ocean in eco-geographical processes
7. Eco-geographic assessment of anthropogenic impact
8. Features of the biosphere and its eco-geographic content
9. The subject of geographical ecology and communications to the other sciences
10. Eco-geographic results of solar activity and its influence on the geographical envelope

Average

1. The place of productive forces in eco-geographical processes
2. Eco-geographical features of Biosphere Theory of V.Vernadsky
3. Geographical nature and structure of the environment
4. The role of the geographical environment in the development of society
5. Ecological essence of natural conditions and resources
6. Global and Regional Impacts to the World Ocean
7. Eco-geographical features of the Earth's spheres.
8. Eco-geographical values of the landscape and the results of its change
9. The role of atmospheric engineering and technology in changing and regulating of environmental processes
10. Eco-geographical assessments of geochemical dissemination of the Earth's crust

Complex

1. The place of the environment and its optimization in geography
2. Philosophical and ecological essence of the interaction of society and nature
3. Analysis of the ecological essence of systems and in the systematic approach
4. The eco-geographical essence and ideas of Chizhevsky in interaction of the Solar Activations
5. Eco-geographic essence in the use of natural resources
6. The organic world of land and its economic significance
7. Determination of the definition of common and distinctive features of natural conditions and resources
8. Analysis of the influence of natural conditions in ethno genetic processes
9. Ecological results of the impact of geological processes on ecological systems
10. What is a living matter, what is its ecological and eco-geographical essence?

**Dean of the Faculty of
Ecology and Soil sciences:**

prof.N.Shamilov

Chairman of the Methodological Council:

dos.A.Huseynly

Head of the department of Geoecology:

dos.A.Aghbabali

Faculty of Ecology and Soil Science
specialty "Ecology" department full-time
Questions of the Final State Examination for 2020/2021
on the subject "General Ecology"

Easy questions:

1. Nutritional interactions in ecosystems (trophic structure)
2. The main characteristics of the levels of ecological systems (population, biocenosis, biogeocenosis, biosphere)
3. Terrestrial and aquatic ecosystems (comparative analysis)
4. Freshwater ecosystems (lentic and lotic ecosystems)
5. Marine ecosystems
6. The main factors of the environment and adaptation to them of organisms (climatic, edaphic, physical, chemical, biotic)
7. Basic living environments (terrestrial-air, water)
8. Basic living environments (soil, organism)
9. Population as a biological system (concept)
10. The life forms of organisms (plants, animals)

More difficult questions:

1. Population properties and types of survival curves
2. The structure of the population (features of distribution, aggregation, isolation, territoriality)
3. Biocenosis as a biological system (concept, trophic and spatial structure)
4. Positive interactions of organisms (commensalism, cooperation, mutualism)
5. Ecological diversification (space, food, activity)
6. Numerical fluctuations and the main signs of r- and K-selection
7. Pyramids of numbers, biomass and energy in ecosystems
8. Types of interrelations between organisms (trophic, topical, phoretic, fabric)
9. Predation, parasitism, allelopathy
10. The laws of Yu. Leibigh and V. Shaelford (the concept of limiting factors and ranges of tolerance)

Complicated questions:

1. Characteristics of the main limiting physical factors (temperature, light, ionizing radiation, water, biogenic elements, soil)
2. General classification of biotic interactions of organisms
3. Competition and coexistence of species
4. Ecotones and the concept of edge effect
5. Energy and material flow in ecosystems (primary and secondary productivity)
6. Characteristics of the main biomes of the planet
7. Ecosystem dynamics, development strategy (succession and climax)
8. Homeostasis and population dynamics (population dynamics, demographic structure, density regulation)
9. Ecological niche and the Gause principle (concept, fundamental and realized ecological niche)
10. Food chains "grazing" (pasturable) and "decomposition" (detritus)

Dean of the faculty:
Chairman of the Methodological Council:
Head of the department:

prof. N.T.Shamilov
assoc. prof. A.G.Huseynli
prof. N.A.Sadigova

Faculty of Ecology and Soil Science
specialty "Ecology" department full-time
Questions of the Final State Examination for 2020/2021
on the subject "Human, environment and sustainable development"

Easy questions:

1. Evolution of society in its relation to nature. Ecological niches of man
2. Demographic behavior and types of human migration
3. The ability to manage the demographic process
4. The concept of "eco-city" or city of the future
5. The concept of a biopositive country. Urban-ecological design program of the country and city
6. Harmful habits or diseases of civilization
7. Classification and definition of environmental disasters and crises
8. Classification of human needs (social, biological, vital)
9. Ecology of nutrition and food ration
10. Ecological and economic relationships in society

More difficult questions:

1. Characteristics of modern energy and the prognosis of energy of the future
2. Food security and the problem of hunger
3. Security problems in human ecology
4. Strategies for reducing waste and consuming goods
5. Human heredity, gene pool and the environment
6. Lifestyle and quality of life
7. Anthropogenic factors and public health
8. The concept of human adaptation and acclimatization
9. The impact of agricultural activities on the environment
10. Differences in rural and urban lifestyles

Difficult questions:

1. Natural - endemic diseases
2. The concept of sustainable development of society and modern directions
3. The effect of synergies and the integrated nature of environmental problems
4. Typology of the main types of pollution of the urban environment
5. Indicators of the health status of the population - mortality, malignant neoplasms, reproductive health, children's health
6. Public health and factors affecting it
7. Types and nature of environmental quality standards in human ecology
8. Epidemiological consequences of different forms of nature transformation
9. Regional patterns of the spread of disease. Natural - endemic diseases
10. Development of economic and legal mechanisms of rational nature management (ecosystem services)

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**Questions of the state examination,
which will be held in the 2020/2021 academic year on the discipline Ecological Chemistry,
the specialty Ecology of the Ecology and Soil Science Faculty**

Easy

1. Subject and tasks of Ecological Chemistry
2. Pollution. Chemical pollutants of anthropogenic origin
3. Classification of chemical substances according to the effect on living organisms
4. Toxicity and carcinogenicity. Molar toxicity
5. Mechanism of toxic effects of chemicals. Metabolism and detoxification
6. Mechanism of carcinogenic effects. Organic carcinogens
7. The concept of the maximum permissible concentration and the maximum permissible level
8. Principles of normalizing the quality of the environment
9. Maximum allowable concentrations for air and water environments
10. Maximum permissible concentration of heavy metals in soil

Average

11. Chemical elements in living organisms. Distinctive features of macro- and microelements
12. Classification of chemical elements by V.I.Vernadsky and V.V.Kovalsky
13. The main chemical compounds of living organisms (water, organic and inorganic compounds)
14. Biochemical migration cycles of chemical elements. Anthropogenic migration
15. Migratory schemes of pollutants (first, second, third, fourth and fifth stages)
16. Biochemical role and toxic properties of the subgroup IA elements (Li, Na, K, Rb, Cs, Fr)
17. Biochemical role and toxic properties of the subgroup IIA elements (Be, Mg, Ca, Sr, Ba, Ra)
18. Biochemical role and toxic properties of the subgroup IIIA elements (B, Al, Ga, In, Tl)
19. Biochemical role and toxic properties of the subgroups IVA elements (C, Si, Ge, Sn, Pb)
20. Biochemical role and toxic properties of elements of the subgroup VA (N, P, As, Sb, Bi)

Difficult

21. Biochemical role and toxic properties of elements of the subgroup VIA (O, S, Se, Te, Po)
22. Biochemical role and toxic properties of elements of the subgroup VIIA (F, Cl, Br, I, At)
23. Biochemical role and toxic properties of the subgroup IIB elements (Zn, Cd, Hg)
24. Biochemical role and toxic properties of the subgroup VIB elements (Cr, Mo, W)
25. Biochemical role and toxic properties of the subgroup VIII B elements (Fe, Co, Ni)
26. Classification of organic compounds and the dependence of their toxic properties on the chemical composition and structure
27. Environmental problems caused by dioxins
28. Toxic properties of alcohols
29. Toxic properties of carboxylic acids and ethers
30. Toxic properties of amines, nitro compounds and alkylhydrazines

**Dean of the Faculty
of Ecology and Soil Science**

Nazim Shamilov

**Head of the Department
of Ecological Chemistry**

Sevinj Hajiyeva

Chairman of Methodol. Council

Abuali Huseyinli

**Questions of the state examination,
which will be held in the 2020/2021 academic year on the discipline Industrial Ecology,
the specialty Ecology of the Ecology and Soil Science Faculty**

EASY

1. Environmental pollution with wastes
2. Production and consumption wastes. Solid domestic waste disposal and compaction
3. Thermal utilization of solid household waste
4. The working principle of thermal power plants. Thermal pollution of the environment
5. Types of atomic power plants. The technogenic accidents at the nuclear power plant
6. Natural gas deposits. Disposal of associated gas
7. Characteristics of the petrochemical industry, its environmental impact
8. The effects of motor transport on the environment
9. Dependence of the composition of flue gases on fuel combustion mode
10. Antidetonator additives, their effects on the environment

AVERAGE

11. Low- and non-waste production
12. Absorption as a waste gas treatment method
13. Physical-chemical treatment methods of waste water
14. Solid wastes of thermal power plants. Gaseous wastes of thermal power plants
15. Classification of radioactive waste. Problems of radioactive waste disposal
16. Nuclear fuel enterprises. Uranium deposits development
17. The environmental impact of transportation and extraction of hydrocarbons
18. Methods of dealing with oil leaks. Composition of crude oil
19. The environmental impact of the mining industry
20. The impact of black and non-ferrous metallurgy on the environment. Use of cuttings

DIFFICULT

21. Ecological assessment of technologies. Environmental factor (E-factor)
22. Technogenic gas wastes, their physical and chemical transformation in the atmosphere
23. Defect and its types. Photochemical reactions in the atmosphere
24. Wastewater treatment reagent methods. Cleans gases from sulfur and nitrogen compounds
25. Mechanical, chemical and biochemical treatment methods of waste water
26. Waste from the oil refining industry
27. Environmental impact of the nitrogen industry
28. Disposal of wastes from the mining and metallurgical industries
29. Sulfuric acid and the environmental impact of its production
30. Wastes from the production of potassium and phosphorus fertilizers

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