QUESTIONS FOR DIFFERENTIATED CREDIT TEST ON RADIATION AND ECOLOGICAL MEDICINE
for the second year students of the faculty for international students

**Ecological medicine**
1. Environmental medicine: history of development, concept, goal and objectives.
2. Methods of environmental medicine for studying the influence of environmental factors on human health.
3. The concept of «environmental diseases». Environmentally dependent morbidity. Diagnostics, treatment and prevention of environmental diseases.
4. Environmental factors: concept, characteristics, classification. Specific and non-specific mechanisms of organism protection from the adverse effects of environmental factors.
8. Types of skin sensitivity to ultraviolet radiation (UVR). Protection of human organism from negative effects of UVR.
9. Meteorological sensitivity: definition, classification according the severity of the clinical manifestations and types of meteorological reactions, prevention.
12. Toxicokinetics: absorption of xenobiotics, their distribution in the body, metabolism and excretion.
13. General characteristics and basic mechanisms of xenobiotics detoxication in the human organism.
14. Multiple chemical sensitivity: concept, reasons of the development, clinical symptoms, medical diagnostics, prevention.
16. Characteristics of the main air pollutants in the city (sulfur dioxide, nitrogen oxide, carbon monoxide) and related diseases. Measures for the atmosphere protection from the sources of pollution.
17. Smog: concept, types, conditions of development, effects of exposure on the human body, prevention.
18. Ozone layer: concept, functions of the ozone layer. Reasons for the destruction of the ozone layer, negative consequences for humanity.
21. Role of water in spread of diseases (endemic and epidemic diseases, chronic poisonings by chemicals).
24. Role of soil in spread of diseases (endemic and epidemic diseases, chronic poisoning by chemicals).
25. Endemic pathology: definition, concept, examples and general ways of prevention.
27. Endemic goiter: concept, causes, symptoms, non-specific and specific prevention.
28. Actual ecologically dependent problems of nutrition.
29. Genetically modified organisms: the concept, the risks for the environment and human health.
30. Basic significant xenobiotics, which can be ingested with food. Prevention of possible adverse effects.
31. Nitrates and nitrites: chemical characteristics, the main clinical symptoms of acute and chronic poisoning and its prevention.
32. The role of genetic factors in the occurrence of ecologically dependent pathology.
34. Electrosensitivity: definition, prevalence among the population, the main clinical symptoms, prevention.
35. Electrosomg: concept, sources, adverse effects on the population, prevention.
37. «Sick building syndrome»: concept, reasons, main clinical symptoms, prevention.

40. Socio-hygienic monitoring, concept, goals, objectives, stages.

**Radiation medicine:**

41. Radiation medicine: the concept, purposes, tasks, methods, connection with clinical disciplines. The history of radioactivity discovery and radiation medicine development.

42. Radioactivity: the concept, systemic and traditional units of radioactivity, their relationship.

43. The law of radioactive decay. Types of radioactive transformations of nuclei: alpha-, beta-, gamma-transformation of the nuclei.

44. Classification of ionizing radiations, their properties. Conception of linear energy transfer. Interaction of electromagnetic radiation.

45. Basics of dosimetry: exposure dose, absorbed dose, radiation dose equivalent, effective dose. SI and non-SI units of doses, the ratio between them.


47. Detectors and instruments used for ionizing radiation registration and measurement. Principles of radiometric researches.


50. Radon, its sources and conditions of exposure. Influence on human health, prevention.

51. Natural radionuclides that form internal exposure of human organism.

52. Technologically changed background radiation: the concept, general sources.

53. Stages of radiation injury: direct and indirect action. The radiolysis of water, the main products of radiolysis. The influence of oxygen on the radiolysis.

54. The molecular basis of radiosensitivity. The factors that determine the radiosensitivity at the cellular and tissue levels. Types of cell reactions to irradiation.

55. The Bergonie-Tribondo rule. The factors that determine the radiosensitivity of the organs, organisms and population.


57. The factors that determine the irradiation lesions of the body. The concept of "critical organ".

58. Deterministic effects of irradiation: concept, types, effects, pathogenesis.

60. Stochastic effects of irradiation: concept, types, effects, pathogenesis.


63. The concept of radiation accidents. Accidents reports in the world.

64. Characteristics of the general radiation accidents types.

65. International classification of the radiation accidents (international nuclear event scale).

66. The concept of population protection from the radiation accidents at the nuclear power plants.

67. Chernobyl disaster: history, the dynamics of emissions in time and space.

68. Affect of Chernobyl radionuclides release on the health of the population. Formation of exposure doses of the population after Chernobyl accident.

69. Radionuclide migration in biosphere: local and global deposition, accumulation of radionuclides in hydrosphere and lithosphere. Basic ways of radionuclides accumulation in organism. Types of distribution.

70. Characteristics (physical and chemical properties, accumulation and distribution in the body, biological effects) of the basic radionuclides of Chernobyl release: Cs-137, Sr-90, I-131, Pu-239.

71. Basic principles of radiation safety. Basic dose limits.

72. Methods of protection from ionizing radiation: the influence of dose, time, distance and shields on the irradiation.

73. A concept of medical irradiation. The principles of radiation dose reduction in patients.

74. The concept of closed and open sources of ionizing radiation. Radiation safety of personnel and population in the conditions of the existing exposure.

75. The decrease of the doses from artificial sources of ionizing radiation in diagnostic medicine. Protection of patients and medical staff from irradiation.

76. The ways to decrease the annual effective dose of external exposure from natural and artificial sources.

77. The ways to decrease the annual effective dose of internal exposure from natural and artificial sources.

78. Radiometry of the environment, food and water. Permissible levels of radionuclides in water and food.

79. Radiation safety monitoring: concept, basic principles and ways to ensure. Radiation contamination of the territory of Belarus.

80. The principles of the population living on the contaminated territories.