**Экзамениационные вопросы по дисциплине**

**«GISD** **5302-** **ГИС В ДЕМОГРАФИИ»**

**Сognitive competence**

1. Definition of GIS. Basic components and functionality of GIS. How GIS Works?

2. The history of the development of hardware and software GIS. GIS classifications. What is data classification in GIS?

3. Data sources for GIS: geographic maps, remote sensing data. GIS Database software. Secure data collection tool.

4. Data sources for GIS: satellite positioning systems, geodetic technologies, databases. Preparing for digital future.

5. Hardware GIS. History of Hardware GIS. Evolution of computer hardware. Classification of computers.

6. Hardware GIS. Processor, primary memory, secondary memory, communication devices. Evolution of GIS devices.

7. Hardware GIS. I / O peripheral devices. What are the necessary hardware for GIS

8.Functional classification of GIS software. An overview of the ArcGIS GIS software package.

9. Overview characteristics of additional GIS modules ArcGIS. ArcGIS for developers.

10. Geographic coordinate systems. Projection coordinate systems. What is projected coordinate system in GIS?

**Functional**

1. Raster model of representation of spatial data in GIS. Advantages and disadvantages of a raster model. The most common raster formats for representing spatial data in GIS.

2. Color models used to display full color rasters. Georeference of raster images. How do you georeference image data in GIS

3.Vector model as a way to represent spatial data in GIS. Peculiarities of organizing communication between vector objects: vector-non-topological model, vector-topological model. Georelational and object-oriented vector data models.

4. An overview of the vector GIS data format ArcGIS - geodatabase. Types of geodatabases.

5. Features of symbolization of vector geodata. Tiled vector data model for the geographical features of symbolized maps

7. Methods of classification of quantitative geodata in GIS. What are the four types of data classifications.

8. Elementary spatial GIS analysis. What are spatial analysis techniques?

How to Perform Spatial Analysis?

9. Spatial statistics in GIS. What are the types of spatial statistics?

10. Overlay operations in GIS. What are overlay methods and what is a main purpose to use this tool?

**Systemic**

1. Analysis of proximity in GIS. What is the most common and useful technique in proximity analysis?

2. Reclassification and regionalization using GIS technologies. Why do we need to reclassify the data in a slope analysis?

3. Generalization of vector geo objects in GIS. What are the different methods of generalization?

4. Geoprocessing of data in GIS. Why is geoprocessing important in any GIS operation?

5. Basic operations of network analysis. Network analysis tasks. What are the ways to analyze networks?

6. Geocoding in GIS. What is geocoding used for? What is the difference between geocoding and georeferencing?

7. The main functions of cartographic raster algebra. Raster cell statistics, neighborhood statistics, zonal statistics. The main functions for use of map algebra.

8. Analysis of hypsometric surfaces in GIS. Hydrological GIS modeling. How do you find a Hypsometric integral?

9. Data output from the GIS environment. Comparison of the process of creating a map using traditional cartography and GIS. What are the advantages of using geographic information systems GIS over traditional maps?

10. Data output from the GIS environment. General recommendations for creating a map. The main elements of the map. What factors need to be considered when creating a map? Design options on the map of vector layers.

**СПИСОК** **РЕКОМЕНДУЕМОЙ** **ЛИТЕРАТУРЫ**

1.Glad, John. 2008. Future Human Evolution: Eugenics in the Twenty-First Century. Hermitage Publishers, ISBN 1-55779-154-6 [1]

2.Preston, Samuel, Patrick Heuveline, and Michel Guillot. 2000. Demography: Measuring and Modeling Population Processes. Blackwell Publishing.

3.Paul R. Ehrlich (1968), The Population Bomb Controversial Neo-Malthusianist pamphlet

4.Leonid A. Gavrilov & Natalia S. Gavrilova (1991), The Biology of Life Span: A Quantitative Approach. New York: Harwood Academic Publisher, ISBN 3-7186-4983-7

5.Phillip Longman (2004), The Empty Cradle: how falling birth rates threaten global prosperity and what to do about it

6.Joe McFalls (2007), Population: A Lively Introduction, Population Reference Bureau [2]

7.Ben J. Wattenberg (2004), How the New Demography of Depopulation Will Shape Our Future. Chicago: R. Dee, ISBN 1-56663-606-X

8.Andrey Korotayev, Artemy Malkov, & Daria Khaltourina (2006). Introduction to Social Macrodynamics: Compact Macromodels of the World System Growth. Moscow: URSS, ISBN 5-484-00414-4 [3]

9.Demographic Winter 52 minute documentary on demography and global underpopulation

10.Demographic Bomb Part II documentary (to Demographic Winter) on demography and the effects of population control