УТВЕРЖДЕНО

Решение заседания кафедры

общего землеведения и гидрометеорологии

21 ноября 2024 г., № 4

Теоретические вопросы для проведения экзамена

по учебной дисциплине«Modelling of Hydrological Processes» /

«Моделирование гидрологических процессов»

(магистратура, иностранные студенты)

Форма проведения – устная

1. The structure of the hydrosphere, the distribution of elements of the water balance.

2. General information about the main characteristics of the water regime.

3. Collection of initial hydrological information, observations and measurements

4. Anthropogenic influence hydrological regime.

5. Factors of runoff formation.

6. Hydrological processes associated with ice and snow.

7. Processes that determine heavy rainfall and flooding.

8. Factors of aridity and drought.

9. Stages of modeling development.

10. Generally accepted classifications of hydrological models.

11. Model structure, basic equations.

12. Types of input information.

13. Calibrated parameters of models.

14. Mathematical modeling of the processes of formation of rain floods.

15. Mathematical models in flood management: Deterministic models. Hydraulic models. Hydrological models.

16. Hydrological processes described by conceptual hydrological models: precipitation, infiltration, soil moisture content.

17. Hydrological processes described by conceptual hydrological models: evapotranspiration, runoff formation, river routing.

18. Typical conceptual hydrological models.

19. Genetic formula of slope and channel runoff.

20. Determination of runoff losses for surface, soil retention, infiltration and evaporation

21. Basic methods of modeling spring runoff of lowland rivers.

22. Runoff calculations based on the water balance equation.

23. Synoptic-statistical methods in hydrological modeling.

24. Water balance modeling within river basins

25. Test statistics to assess the accuracy of models.

26. Validation of models, evaluation of the quality of calculations.

27. Reasons for the uncertainty of calculations of hydrological models.

28. The use of mathematical modeling in forecasting the processes of the hydrological regime

Старший преподаватель кафедры Н.В. Дорожко