Программа вступительных экзаменов по **иностранному языку (английскому)** включает:

1. Письменный перевод со словарем оригинального текста по специальности (объем - 2000 печатных знаков) за 60 минут.

2. Чтение и перевод без словаря оригинального текста по широкому профилю факультета (объем - 1000 печатных знаков) за 15 мин.

3. Беседа на английском языке по тематике научных интересов абитуриента.

**Билет №1**

1. **Evaluation of Soil Potassium Test to Improve Fertilizer Recommendations for Corn**

The corn (Zea mays) growing belt of the United States is shifting north and west of the traditional Corn Belt due to changing climate patterns and improved corn hybrid varieties with short-season yield potential. Corn yields have increased more than two folds in North Dakota in past three decades [1]. The increase in corn yield in North Dakota is the net result of improved corn genetics and higher rainfall during the growing season [2]. Since higher yields are often accompanied with high nutrient removal from the soil [3], maintaining an adequate supply of nutrients is the next major challenge for the corn growers of North Dakota.

Providing an adequate supply of nutrients to corn is important for gaining yield benefits from other management practices. Corn is known to take up substantial amounts of K during the growing season. For instance, corn yielding 10.11 Mt/ha can accumulate about 165 kg∙ha−1 of potassium [4]. Crop response to K is not as great as that of N, but K plays a vital role in every facet of crop growth. Positive correlation has been reported among K content of crops and photosynthesis, carbohydrate metabolism, lodging and disease resistance [5]. Potassium plays an important role in water uptake and helps in maintenance of yields in adverse climatic conditions such as drought [6]-[8]. Therefore, maintaining an adequate level of K is important in the rainfed agricultural system of North Dakota.

Soil testing is an important diagnostic tool for estimating nutrient supplying capacity of soils for growing crops. The most widely used procedure for estimating plant-available potassium is extraction of K from air-dried soil samples using 1 M ammonium acetate [9]. However, air-drying of soil samples is known to collapse or scroll up the clay lattice structure leading to release or entrapment of K depending upon soil solution K concentration and clay mineralogy [10], which can lead to over- or under-estimation of soil-K levels [11].

**2. Biodiversity and Ecosystems**

Species diversity appears to have two major roles in the self-organiza­tion of large-scale ecosystems. First, it provides the units through which energy and materials flow, giving the system its functional proper­ties. There is some experimental evidence that species diversity increases the productivity of ecosystems, by utiliz­ing more of the possible pathways for energy flow and nutrient cy­cling. Second, diversity provides the ecosystem with the resilience to respond to unpredictable surprises.

"Keystone process" species are those that control the system dur­ing the exploitation and conservation phases. The species that keep the system resilient in the sense of absorbing perturbation are those that are important in the release and reorganization phases. The latter group can be thought of as a form of ecosystem "insurance." The insurance aspect includes the reservoirs of genetic material necessary for the evolution of microbial, plant, animal, and human life. Genes thereby constrain the self-organi­zation process to those options that have a higher probability of suc­cess.