

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ  
ИНКЛЮЗИВНОГО ВЫСШЕГО ОБРАЗОВАНИЯ  
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УНИВЕРСИТЕТ»

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КАФЕДРА РОМАНО-GERMAHCKИX ЯЗЫКОВ

«Утверждаю»

Зав. кафедры романо-германских языков

С. Х. Казиахмедова

«31» август 2018

**ФОНД ОЦЕНОЧНЫХ СРЕДСТВ  
ПО ДИСЦИПЛИНЕ**

**ПЕРЕВОД НАУЧНОГО ТЕКСТА (ВТОРОЙ ИНОСТРАННЫЙ ЯЗЫК)**

наименование дисциплины / практики

45.05.01 Перевод и переводоведение

шифр и наименование специальности

Лингвистическое обеспечение межгосударственных отношений

наименование специализации

Москва 2018

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Фонд оценочных средств рассмотрен и одобрен на заседании кафедры романо-германских языков, протокол № 1 от «28» августа 2018 г.

Заведующий кафедрой \_\_\_\_\_ Казиахмедова С.Х.

Дополнения и изменения, внесенные в фонд оценочных средств, утверждены на заседании кафедры романо-германских языков, протокол № 1 от «30» августа 2019 г.

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**1. Паспорт фонда оценочных средств**  
по дисциплине Перевод научного текста (первый иностранный язык)

Таблица 1.

№ п/п	Контролируемые разделы (темы), дисциплины	Коды компе тенций	Оценочные средства - наименование	
			текущий контроль	проме жуточн ая аттеста ция
1.	Тема 1. Грамматические и стилистические особенности научно-технического текста.	ОК-3, 6, ПК-1, 4, 8, 14, 17	Проверка переводческого задания	
2.	Тема 2. Принципы научно-технического перевода и анализ полученного текста.	ОК-6, ПК-1, 7, 10, 19	Проверка переводческого задания	
3.	Тема 3. Перевод научной журнальной статьи на материале английского языка.	ОК-6, ПК-1, 7, 10, 19	Проверка переводческого задания	
4.	Тема 4. Перевод научной статьи на материале русского языка.	ОК-6, ПК-1, 7, 10, 19	Проверка переводческого задания	
5.	Тема 5. Перевод информационного сообщения на материалах английского и русского языков (доклад на конференции).	ОК-6, ПК-1, 7, 10, 19	Проверка переводческого задания	
6.	Тема 6. Перевод научно-популярного текста на материале английского языка (статья из журнала).	ОК-6, ПК-1, 7, 10, 19	Проверка переводческого задания	Контроль ная работа
7.	Тема 7. Перевод научно-популярного текста на материале русского языка (статья из журнала).	ОК-6, ПК-1, 7, 10, 19	Проверка переводческого задания	
8.	Тема 8. Перевод научно-популярного текста на материале английского языка (статья из научного сайта Интернета).	ОК-6, ПК-1, 7, 10, 19	Проверка переводческого задания	
9.	Тема 9. Перевод научно-популярного текста на материале русского языка (статья из научного сайта Интернета).	ОК-6, ПК-1, 7, 10, 19	Проверка переводческого задания	
				Зачёт

Таблица 2. Перечень компетенций:

Код компетен ции	Наименование результата обучения
ОПК-3	способностью применять знание двух иностранных языков для решения профессиональных задач
ОПК-6	способностью применять приемы первой помощи, методы защиты производственного персонала и населения в условиях чрезвычайных ситуаций

ПК-1	способностью проводить лингвистический анализ текста/дискурса на основе системных знаний современного этапа и истории развития изучаемых языков
ПК-7	способностью осуществлять предпереводческий анализ письменного и устного текста, способствующий точному восприятию исходного высказывания, прогнозированию вероятного когнитивного диссонанса и несоответствий в процессе перевода и способов их преодоления
ПК-10	способностью осуществлять послепереводческое саморедактирование и контрольное редактирование текста перевода
ПК-19	способностью проводить лингвопереводческий анализ текста и создавать лингвопереводческий и лингвострановедческий комментарий к тексту

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## 2. Перечень оценочных средств

Таблица 3.

№	Наименование оценочного средства	Характеристика оценочного средства	Представление оценочного средства в ФОС
1	Разноуровневые задачи	Средство, позволяющее оценить уровень знаний обучающегося путем творческого решения им задания по переводу научного или научно-популярного текста.	Задания контрольного перевода научных текстов по темам дисциплины

## 3. Описание показателей и критериев оценивания результатов обучения на различных этапах формирования компетенций

Таблица 4.

Код компетенции	Уровень освоения компетенции	Показатели достижения компетенции	Критерии оценивания результатов обучения
		Знает	
	Недостаточный уровень. Оценка «незачтено», «неудовлетворительно»	Не знает систему предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода.	Не способен применять знание иностранного языка для решения профессиональных задач перевода, допускает много ошибок при переводе, недостаточно знает систему предпереводческого анализа текста, послепереводческого саморедактирования текста перевода, не способен на научной основе организовать свою самостоятельную профессиональную деятельность
	Базовый уровень Оценка «зачтено», «удовлетворительно»	Знает некоторые элементы системы предпереводческого	Знает иностранный язык, но с ошибками применяет его для решения профессиональных задач, знает систему предпереводческого анализа текста, послепереводческого саморедактирования текста перевода,

ОК-3, 6, ПК-1, 7, 10, 19		анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода.	но допускает ошибки в переводе при решении профессиональных задач, способен на научной основе организовать свою самостоятельную профессиональную деятельность
	Средний уровень Оценка «зачтено», «хорошо»	Знает основные элементы системы предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода.	Знает иностранный язык, но иногда допускает ошибки при решении профессиональных задач, знает систему предпереводческого анализа текста, послепереводческого саморедактирования текста перевода, иногда допускает неточности в переводе при решении профессиональных задач, способен на научной основе организовать свою самостоятельную профессиональную деятельность
	Высокий уровень. Оценка «зачтено», «отлично»	Знает систему предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода.	В совершенстве знает систему предпереводческого анализа текста, послепереводческого саморедактирования текста перевода, не допускает ошибки в использовании иностранного языка при решении профессиональных задач, способен на научной основе организовать свою самостоятельную профессиональную деятельность
		Умеет	
	Базовый уровень	Применять некоторые элементы системы предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода.	Умеет при переводе с ошибками применять некоторые элементы системы предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода
	Средний уровень	Применять основные элементы	В основном умеет при переводе применять основные элементы системы предпереводческого анализа, послепереводческого саморедактирования и контрольного

		системы предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода.	редактирования текста
Высокий уровень	Применять все элементы системы предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода.	Умеет при переводе применять систему предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста	
	Владеет		
Базовый уровень	Владеет некоторыми элементами предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода	Владеет в некоторой степени элементами предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода Владеет лексическим материалом, предусмотренным программой (термины, клише, фразеологизмы, устойчивые словосочетания и т.п.), пригодным для использования при переводе; использует различные синтаксические конструкции; допускает ошибки, не исправленные самостоятельно; – владеет различными видами дискурса, демонстрирует умение устанавливать логические связи; – в устном и письменном переводе соблюдает нормы.	
Средний уровень	Владеет основными элементами предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста	Владеет основными элементами предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода Владеет лексическим материалом, предусмотренным программой (термины, клише, фразеологизмы, устойчивые словосочетания и т.п.), пригодным для использования при переводе; использует различные синтаксические конструкции; допускает ошибки, но исправляет их самостоятельно; – владеет различными видами дискурса, демонстрирует умение устанавливать логические связи; – в устном и письменном переводе соблюдает нормы; адекватно извлекает	



		перевода	не только эксплицитную, но и имплицитную информацию из текста оригинала с целью ее передачи средствами другого языка; демонстрирует умение устанавливать логические связи; обнаруживает достаточные знания реалий иноязычной культуры.
	Высокий уровень	Владеет всей системой предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода	Владеет всеми элементами предпереводческого анализа, послепереводческого саморедактирования и контрольного редактирования текста перевода. В полном объеме владеет лексическим материалом, предусмотренным программой (термины, клише, фразеологизмы, устойчивые словосочетания и т.п.), пригодным для использования при переводе; использует различные синтаксические конструкции; не допускает ошибки при переводе; владеет различными видами дискурса, демонстрирует умение устанавливать логические связи; в устном и письменном переводе соблюдает нормы; адекватно извлекает не только эксплицитную, но и имплицитную информацию из текста оригинала с целью ее передачи средствами другого языка; обнаруживает хорошие знания реалий иноязычной культуры.

#### **4. Методические материалы, определяющие процедуры оценивания результатов обучения, характеризующих этапы формирования компетенций**

Критерии оценки владения компетенциями ОК-3, 6, ПК-1, 7, 10, 19 при выполнении контрольного задания по переводу научного текста:

Оценка «ОТЛИЧНО» ставится, если:

- студент без ошибок осуществил письменный перевод аутентичного научного текста;

- продемонстрировал полное владение системой предпереводческого анализа научного текста и реализовал эти знания практически; в полном объеме владеет лексическим материалом, предусмотренным программой (термины, клише, фразеологизмы, устойчивые словосочетания и т.п.), пригодным для использования при переводе; использует различные синтаксические конструкции; не допускает ошибки при переводе; владеет различными видами дискурса, демонстрирует умение устанавливать логические связи; в устном и письменном переводе соблюдает нормы; адекватно извлекает не только эксплицитную, но и имплицитную информацию из текста оригинала с целью ее передачи средствами другого языка; обнаруживает хорошие знания реалий иноязычной культуры.

Оценка «ХОРОШО» ставится, если:

- студент с незначительными неточностями осуществил письменный перевод аутентичного научного текста;

- продемонстрировал владение основными элементами системы предпереводческого анализа научного текста и реализовал эти знания практически; в полном объеме владеет лексическим материалом, предусмотренным программой (термины, клише, фразеологизмы, устойчивые словосочетания и т.п.), пригодным для использования при переводе; использует различные синтаксические конструкции; допускает ошибки при переводе, но исправляет их самостоятельно; владеет различными видами дискурса, демонстрирует умение устанавливать логические связи; в устном и письменном переводе соблюдает нормы; адекватно извлекает не только эксплицитную, но и имплицитную информацию из текста оригинала с целью ее передачи средствами другого языка; обнаруживает хорошие знания реалий иноязычной культуры.

Оценка «УДОВЛЕТВОРИТЕЛЬНО» ставится, если:

- студент осуществил письменный перевод аутентичного научного текста с ошибками;

- продемонстрировал владение некоторыми элементами системы предпереводческого анализа научного текста и реализовал эти знания практически; владеет лексическим материалом, предусмотренным программой (термины, клише, фразеологизмы, устойчивые словосочетания и т.п.), пригодным для использования при переводе; использует различные синтаксические конструкции; допускает ошибки при переводе, но не исправляет их самостоятельно; владеет различными видами дискурса, демонстрирует умение устанавливать логические связи; в устном и письменном переводе соблюдает нормы; допускает ошибки при извлечении имплицитную информацию из текста оригинала с целью ее передачи средствами другого языка; обнаруживает слабые знания реалий иноязычной культуры.

Оценка «НЕУДОВЛЕТВОРИТЕЛЬНО» ставится, если: студент

- студент осуществил письменный перевод лишь части аутентичного научного текста, но при этом сделал ошибки и искажения;

- не смог практически продемонстрировать владение системой предпереводческого анализа научного текста; не владеет в полном объеме лексическим материалом, предусмотренным программой (термины, клише, фразеологизмы, устойчивые словосочетания и т.п.), пригодным для использования при переводе; допускает ошибки и искажения при переводе и не исправляет их самостоятельно; в устном и письменном переводе нарушает нормы; не может извлечь имплицитную информацию из текста оригинала с целью ее передачи средствами другого языка; обнаруживает слабые знания реалий иноязычной культуры.

#### Критерии оценки (в баллах):

- 50-60 баллов выставляется студенту, если он демонстрирует ограниченный запас слов, недостаточный для выполнения поставленной задачи перевода;

– не соблюдает нормы при переводе, не владеет достаточными знаниями реалий иноязычной культуры; не осознает цель перевода/ прагматическую установку, тип и адресность переводимого текста; затрудняется в определении стиля и жанра текста оригинала;

– коммуникативная задача не выполнена; содержание ответа не соответствует поставленной в задании коммуникативной задаче;

– допускаются многочисленные лексические и грамматические ошибки, которые затрудняют понимание;

– перевод плохо воспринимается на слух из-за большого количества фонематических ошибок.

- 61-75 баллов выставляется студенту, если он демонстрирует ограниченный запас слов, в некоторых случаях недостаточный для выполнения поставленной задачи; в речи и при переводе допускает ошибки, в целом не препятствующие пониманию,

– испытывает некоторые затруднения в построении композиции устного / письменного переводческого высказывания, имеет отдельные недостатки в использовании средств логической связи; имеет ошибки в понимании и передаче имплицитного содержания текста;

– фрагментарно соблюдает нормы при переводе, не владеет достаточными знаниями реалий иноязычной культуры;

– неточно осознает цель перевода/ прагматическую установку, тип и адресность переводимого текста; затрудняется в определении стиля и жанра текста оригинала, специфики его стилистического жанрового оформления для передачи ее средствами другого языка; в переводе допущены пропуски текста, смысловые и терминологические искажения, нарушен стиль передачи текста оригинала.

- 76-90 баллов выставляется студенту, если он в целом владеет словарным запасом программных тем, но допускает неточности в употреблении терминов, лексических единиц; не в полном объеме использует разнообразные синтаксические конструкции; речь перевода в целом грамотна, но иногда встречаются незначительные ошибки (артикли, неправильное грамматическое оформление идеоматических выражений); допускаются небольшие отклонения от произносительных норм.

– владеет основными видами дискурса, но допускает нарушения в построении композиции высказывания перевода; допускает отдельные неточности в использовании средств логической связи; адекватно понимает и передает при переводе эксплицитный смысл текста, но допускает неточности в понимании имплицитного смысла,

– при переводе в целом соблюдает нормы, но допускает ошибки; в целом владеет достаточными знаниями реалий иноязычной культуры;

– правильно выбирает общую стратегию перевода с учетом его цели и характеристики

текста оригинала; точно осознает цель перевода / прагматическую установку, тип и адресность переводимого текста; правильно определяет стиль и жанр текста-оригинала, специфику его стилистического жанрового оформления для передачи ее средствами другого языка, но допускает неточности в выборе переводческих решений, что может привести к смысловой, стилистической и прагматической неадекватности перевода; компенсирует при переводе недостаток предметных, языковых и фоновых знаний с помощью справочных материалов (в том числе словарей разных типов); редактирует собственный перевод, но не всегда может самостоятельно обнаружить и устранить семантические, стилистические и прагматические погрешности при переводе;

- 91-100 баллов выставляется студенту, если он свободно владеет лексическим материалом, предусмотренным программой, включающим определенный набор межъязыковых стандартных соответствий (термины, клише, фразеологизмы, устойчивые словосочетания и т.п.), пригодных для использования в типовых контекстах; использует различные синтаксические конструкции; интонирование соответствует литературной норме; допускает незначительные ошибки, самостоятельно исправленные;

– свободно владеет различными видами дискурса, речь при переводе отличается четкой структурой; адекватно извлекает не только эксплицитную, но и имплицитную информацию из текста оригинала с целью ее передачи средствами другого языка; демонстрирует умение устанавливать логические связи; аргументирует и адекватно выбирает оптимальные переводческие решения, обеспечивающие смысловую, стилистическую и прагматическую адекватность перевода тексту оригинала;

– в устном и письменном переводе соблюдает нормы, обнаруживает достаточные знания реалий иноязычной культуры;

– правильно выбирает общую стратегию перевода с учетом его цели и характеристики текста оригинала; точно осознает цель перевода / прагматическую установку, тип и адресность переводимого текста;

– правильно определяет стиль и жанр текста-оригинала, специфику его стилистического жанрового оформления для передачи ее средствами другого языка; компенсирует при переводе недостаток предметных, языковых и фоновых знаний с помощью справочных материалов (в том числе словарей разных типов); редактирует собственный перевод, обнаруживает и устраняет семантические, стилистические и прагматические погрешности, контролирует корректность выбранных стратегий и переводческих решений.

## **5. Материалы для проведения текущего контроля и промежуточной аттестации**

### **Разноуровневые задачи:**

#### **1. Задания творческого уровня**

Комплект заданий для контрольной работы по дисциплине «Перевод научного текста (первый иностранный язык)».

**Тема** Грамматические и стилистические особенности перевода научно-технического текста.

#### **Вариант 1.**

**Задание 1.** Переведите текст письменно.

<https://www.scientificamerican.com/article/trump-s-wall-may-threaten-thousands-of-plant-and-animal-species-on-the-u-s-mexico-border/>

For the sleek and rare wild cat cats, there is no romance—at least not yet. So far, only males have ventured into Arizona, likely searching for territory and mates after dispersing from a breeding population about 130 miles south of the border in Mexico. Females generally don't travel so far looking for love, though. Whether jaguars gain a real foothold in the U.S. may then depend on a slow northward expansion of the Mexican population. That expansion would depend on narrow corridors of mountain habitat that run north-south along the border and serve as the cats' conduits between the two countries. And now a new threat has emerged: Pres. Donald Trump's plan to fortify the length of the U.S.–Mexico border with his “big, beautiful wall.” The human migrants Trump wants to keep out can climb walls or tunnel under them. They already do both in areas the George W. Bush administration fenced after the 9/11 attacks. Jaguars and numerous other species, however, can't or won't surmount tall, solid barriers. “In wild settings people are really the only species we know is definitely going to get over the wall or under it,” says Aaron Flesch, a wildlife biologist at the University of Arizona. A new wall, in other words, would be a symbolic affront against illegal immigration. But it could have long-term consequences for the ecological life of the U.S. and Mexico borderlands. Many Americans imagine the border as a dry, punishing wasteland—if they think of it at all. Yet where New Mexico and Arizona meet Mexico sits one of the largest protected landscapes in North America outside of Alaska and northern Canada. It's an intersection of deserts and mountains, along with temperate and subtropical climates. The region includes the Sky Islands, named for the isolated mountain ranges that rise from the flats of the Chihuahuan and Sonoran deserts—an inland archipelago that sits primarily in Mexico but spills over the border. The mountains are wetter than the surrounding region, with vegetation that changes with elevation. Shrubs and cacti give way to oak, juniper and pine, and at the very top, even spruce and fir. Large mammals like black bears, mountain lions and bighorn sheep live in these mountains, along with a flabbergasting number of birds. More than 7,000 plant and animal species make their homes here, and more than half of the bird species found on the entire continent inhabit the Sky Islands.

## Вариант 2

Задание 1. Переведите текст письменно.

<https://www.scientificamerican.com/article/large-scale-study-shows-w/>

Over the past few decades, wildlife areas have become increasingly fragmented. In response, many conservationists have argued that, at the very least, developers should leave land that links separated habitats undisturbed in order to improve the health of the remaining ecosystems. But how much these habitat corridors truly help has been unclear because scientific studies of their effects have been carried out on small scales or have failed to control for confounding factors such as the type of land chosen for the corridor. Now the results of a large-scale study may help resolve the issue. According to a report published online this week by the *Proceedings of the National Academy of Sciences*, wildlife corridors enhance crucial plant and animal interactions and significantly increase plant pollination. In their ambitious experiment, Joshua J. Tewksbury of the University of Florida and his colleagues created eight similar landscapes in the Savannah River Site in South Carolina, a federally protected research area. Each of the locations featured five patches of logged and burned ground cover surrounded by mature forest (*see image for an overhead view*). To test the interactions between patches, the team planted male holly bushes in the middle site and female holly bushes in the four surrounding sites, one of which was connected to the central patch. Holly is not naturally present in the forest, and the female plants cannot bear fruit unless they are pollinated. Compared with plants in unconnected patches, significantly more of those in the field linked to the central patch by a corridor bore fruit: the proportion of flowers that

produced berries was 69 percent higher. The researchers also tested the effect corridors had on seed dispersal by birds. After marking thousands of seeds in the central patch with a sticky powder visible under fluorescent light, the scientists analyzed bird droppings containing ingested seeds to track the animals' travels. According to the report, nearly 20 percent more fluorescent fecal samples were collected in connected patches than in isolated ones, indicating that the corridors facilitate the birds' movement. Says Tewksbury: "Our study suggests that these corridors do help in connecting populations, and theoretically, they should help sustain networks of populations existing in increasingly fragmented landscapes."

### Вариант 3

Задание 1. Переведите текст письменно.

Ecology — Development and Challenges Although ecological knowledge has been used by people for thousands of years, ecology is one of the newest of the sciences. For many centuries, scientists concentrated on naming the plants and animals they discovered and on describing the structure of the dead specimens they collected. Gradually, as the question "What is it?" was more easily answered, scientists began studying the effects of the environment on living organisms. During the 1800s, for example, scientists investigated the effects of day length on bird migration and the effects of humidity on the development of insects. Hundreds of books were published on the behavior of animals and on the distribution over the earth of plants and animals. Still, the emphasis was on individual organisms. In the late 1800s and early 1900s, however, scientists began to study populations of organisms, rather than individuals. About the same time, they realized that all of the populations of plants and animals in a certain area make up a sort of community, with different kinds of organisms having different "jobs" in the community. Studies of nature became broader and more far reaching. In 1935, the word ecosystem was coined to describe all of the living communities of an area, together with the nonliving parts of their environment. The earth is one huge ecosystem. Other ecosystems within it include forests, lakes, meadows, vacant lots, your back yard. To know more about ecosystems is the main goal of ecologists today. Even though an ecologist may still concentrate most of his studies on one kind of organism, or on one plant community, his findings help us to understand the ecosystems that include that organism or community. The challenge of ecology is to understand how ecosystems "work" and how they change with time.

### Вариант 4

Задание 1. Переведите текст письменно.

The study of ecology reveals that nature, or any ecosystem in it, is like a complex web. One ecologist has said of the world's ecosystem: "It is not only more complex than we think. It is more complex than we can think". People are part of the world ecosystem, and have a great and growing effect on many other ecosystems. The increasing numbers of people are changing ecosystems all over the world. Some of the changes are small and local: a house is built on a vacant lot; a highway slices through a forest. Some changes are major: long-lasting insect poisons such as DDT were spread all over the earth before scientists became aware of the deadly effects of these chemicals on eagles, ospreys, and pelicans. Lake Erie, one of the largest lakes in the world, is badly polluted and "dying" as a result of wastes produced by people. The burning of coal, oil, and other fuels has affected the entire atmosphere of the earth; and dust particles in the air have helped reduce the amount of sunlight reaching the earth's surface. Changes like these, along with thousands of smaller ones, have alerted us to the dangers of altering ecosystems before we understand the effects of the alterations. We fancy ourselves to be rulers of the

earth. But we don't know the rules. The study of ecology may help us to learn the "rules of nature" on which our survival depends. More and more, people are turning to ecology and ecologists for advice on how to live with nature without destroying our life-giving environment. But often there are no answers, or only partial answers. Ecology is a new science and ecologists know little about most of the world, especially about the tropics and the oceans. Some of the ideas of ecology, accepted for many years, are now being challenged and changed.

### **Вариант 5**

Задание 1. Переведите текст письменно.

**Ecology Defined** Ecology is the study of the relationships between living things and their environment. The term comes from two Greek words, *oikos* (which means "house" or "place to live") and *logos* (which means "study"). So ecology is the study of the "houses", or environments, of living organisms — all of their surroundings, including other animals and plants, climate, and soil. No one is sure when the word ecology was first coined, but German biologist Ernst Haeckel was the first to define it, in 1869. Although the science of ecology is a new one, people have been studying ecology and applying their knowledge of it for many thousands of years. Prehistoric people had to know something about the ecology of wheat and corn before they could successfully raise crops of these plants. Theophrastus, an early Greek botanist, is sometimes called the "first true ecologist" because he was the first to write about plants in terms of their living places, or habitats, such as forest and marsh. The Indians of the North American plains knew a great deal about the ecology of the bison, on which their lives depended. Today we often use ecological knowledge without being aware of it; for example, when we want to have a lawn in a shady place, we plant seeds of a kind of grass that grows well in shade. For the most part, however, people do not think ecologically. When we see a bird or wildflower, our first question is: What is it? Most people are content to know the names of some of the living things around them in nature. Perhaps you are the sort of person who wonders further: What does it do? You may want to know the organism's role in its environment, and how it affects and is affected by other organisms. Ecologists wonder about the same things.

Комплект заданий для контрольной работы по дисциплине «Перевод научного текста (первый иностранный язык)».

Тема 3. Перевод научной журнальной статьи на материале английского языка

### **Вариант 1**

Задание 1. Выполните письменный перевод текста с английского языка на русский:

#### **Biodiversity swift change**

Biodiversity swift change is becoming the challenge for humanity. In 2018, global biological resources have decreased by about 30% since 1970. Global economic output has increased almost sevenfold between 1950 and 2000 and is projected to grow a further sixfold by 2050. Global population doubled in the past 40 years, reaching 6 billion in 2000, and is projected to grow to 9.6 billion by 2050. The developed world population is a part of global ecosystem. The U.S. economy certain sectors are more exposed to biodiversity business risks than others. These include oil & gas, mining, and construction companies, and companies depending on ecosystem services: the tourism, fisheries, forestry and the agricultural sector. Cultivated systems cover at present 24% of the Earth's surface, and agriculture causes

a net loss in global forest cover of around 13 million hectares per year. A shocking example for marine ecosystems biodiversity loss is over-fishing of cod off Newfoundland. The introduction of non-native fish species, especially in freshwater ecosystems and on islands, is among the most important drivers for native fish species extinction. A new generation of pesticides, based on nicotine, is to blame for the catastrophic decline in the U.S. and Europe's honey bees. Scientists have called to ban these pesticides as the insects are key to human's survival – pollinating 70 per cent of the crops which produce most of the world's food. Pesticides are the 'major contributor' to the mysterious decline of bees worldwide. In Britain honey bee numbers have fallen by half since the 1980s. The number of flying insects has plummeted by 75 per cent in the last 25 years, according to a study that suggests we are approaching an "ecological Armageddon". The implications for humanity are profound, with insects providing an essential role for life on earth as pollinators of plants and prey for larger animals. Although it was known species such as bees and butterflies were declining, scientists were left shocked by the drop in numbers across nature reserves in Germany. While no single cause was identified, the widespread destruction of wild areas for agriculture and the use of pesticides are considered likely factors. Climate change was also cited as playing a potential role. Dave Goulson, professor of life sciences at the University of Sussex and the study's co-author, said: "Insects make up about two-thirds of all life on Earth but there has been some kind of horrific decline. "We appear to be making vast tracts of land inhospitable to most forms of life, and are currently on course for ecological Armageddon. If we lose the insects then everything is going to collapse." The researchers were able to rule out weather events and changes in the landscape of nature reserves as possible causes. The results are based on the work of dozens of amateur entomologists across Germany, who have been catching insects in traps – large tent-like structures that funnel insects into a collecting cylinder.

## **Вариант 2**

Задание 1. Выполните письменный перевод текста с английского языка на русский:

Honey bees are arguably our most important commercially available pollinator. They are responsible for pollinating numerous food plants that make our diets more exciting and nutritious, including many fruits, vegetables and nuts. Beekeepers expect some of their bees to die off from season to season – typically, around 17 percent annually. But in recent years, losses have been more than twice as high. As an extension apiculturist for the University of California Cooperative Extension, I talk to many people, from beekeepers and growers to members of the general public, about honey bees. Most of my audiences are concerned about how honey bee losses could affect the security of our food supply. While the massive and sudden colony collapses that occurred a decade ago have abated, honey bees are still dying at troubling rates. Laboratories like mine are working to understand the many factors stressing bees and



develop strategies for protecting them. In 2006 beekeepers in the United States reported that a mysterious affliction, dubbed Colony Collapse Disorder (CCD), was causing widespread die-offs of bees. In colonies affected by CCD, adult workers completely disappeared, although plentiful brood (developing bees) and the queen remained. Beekeepers found no adult bees in and around the hives, and noted that pests and bees from neighboring hives did not immediately raid the affected hives, as might be expected. Scientists now agree that CCD was likely caused by a combination of environmental and biological factors, but nothing specific has been confirmed or proven. CCD is no longer causing large-scale colony death in North America, but beekeepers all over the United States are still reporting troubling colony losses – as high as 45 percent annually. While beekeepers can recoup their losses by making new colonies from existing ones, it is becoming increasingly costly to keep them going. They are using more inputs, such as supplemental food and parasite controls, which raises their operating costs. In turn, they have to charge growers higher prices for pollinating their crops. Beekeepers' biggest challenge today is probably Varroa destructor, an aptly named parasitic mite that we call the vampire of the bee world. Varroa feeds on hemolymph (the insect “blood”) of adult and developing honey bees. In the process it transmits pathogens and suppresses bees' immune response. They are fairly large relative to bees: for perspective, imagine a parasite the size of a dinner plate feeding on you. And individual bees often are hosts to multiple mites.

Тема 6. Перевод научно-популярного текста на материале английского языка (статья из журнала).

### Вариант 1

Задание 1. Переведите текст письменно.

<https://www.japantimes.co.jp/opinion/2019/02/01/addressing-japans-demographic-problems/>

Japan's fertility problem hit a new low in 2016. If the current trend continues, the population of Japan will decline from 127.5 million in 2013 to 116.6 million in 2030. It was the first year since 1899 that fewer than one million babies were born in the country. A 2016 study conducted by a Japanese research firm found that nearly 70% of unmarried Japanese men and 60% of unmarried Japanese women weren't in relationships. Over 15 years never married males consist of 61.8%, females - 58.2%. Many young single Japanese male farmers choose foreign wives, mainly from the Philippines, Sri Lanka, Thailand, China and South Korea, due to a lack of interest from Japanese women living a farming life. The current proportion of people older than 65 years is 27%. Japan has aging population. Its median age is 47.3 years. Over the period of 2010 to 2015, Japan population shrank by almost a million. In 2015, about 663,300 Japanese were living abroad, approximately 75,000 of whom had permanent foreign residency. The new data suggests other bleak milestones, namely, that Japan's population can diminish by 1.5mln in 2018-2027 and by 2mln in 2028-2037. Demography crisis is the most fundamental challenge confronting Japan. There must be the policy steps addressing the declining number of births in Japan. If the number of births in a group of animals keeps falling, that group will likely become extinct. The 5,000-year history of mankind since the invention of letters shows that without exception, no country or region that experienced medium- and long-term population decline has ever prospered. Among the G7 in 2016, France had the highest average number of children born to a woman in her lifetime — at 1.96, followed by the US, Britain at 1.80, Canada at 1.60, Germany at 1.50. Japan at 1.43 is 184th among the world's 203 countries. The lowest total fertility rate (TFR) was 1.09, in Tokyo. Meanwhile, the fertility rate is 2.33 in India and 1.62 in China. Northern European countries have fairly high rates — Sweden at 1.85, Norway 1.72 and Denmark 1.71. What lies behind Japan's low fertility rate? First, the social position of

women is low. The United Nations gender gap index for 2018 puts Japan at 110th among the 149 countries covered — the lowest among the G7. As illustrated by the large wage disparity between men and women, not only is the social position of women low but much of the burden of housework, child rearing and nursing care for elderly members of the family weighs heavily on women. This is the root cause of the sluggish fertility rate in Japan.

## Вариант 2

Задание 1. Переведите текст письменно.

<https://thediplomat.com/2019/03/indian-prime-minister-announces-successful-anti-satellite-weapon-test-in-national-address/>

In a surprise, unscheduled national address on March 27, 2019 Indian Prime Minister Narendra Modi announced that the country had successfully carried out its first-ever anti-satellite (ASAT) weapon test. The test, codenamed “Mission Shakti,” took three minutes and destroyed a target satellite at an altitude of 300 kilometers, in low-Earth orbit (LEO), Modi said. He applauded India’s Defense Research and Development Organization (DRDO) for realizing the capability. Modi underscored that with the test, India was among four countries with a demonstrated anti-satellite capability. The other three countries are the United States, China, and Russia. Only the United States and China have conducted tests of anti-satellite systems against live targets in recent years. In 2007, China received widespread global opprobrium for shooting down a satellite at an altitude of more than 800 kilometers in LEO. The test produced more than 2,000 pieces of debris, hundreds of which will remain in orbit for decades to come. In 2008, the United States demonstrated an anti-satellite capability when a U.S. Navy *Ticonderoga*-class cruiser USS *Lake Erie* launched a Standard Missile-3 interceptor. The test demonstrated the similarities between ballistic missile defense interception technologies and those required to destroy satellites. According to Modi’s description, India’s anti-satellite test destroyed a target at an altitude more similar to the U.S. test, which produced minimal debris that decayed out of orbit within a year’s time. The U.S. test had shot down a satellite at an altitude of 240 km. Russia is developing a new anti-satellite system known as the PL19, or Nudol. That weapon has yet to be tested against a live satellite target. Indian officials have in the past discussed a nascent ASAT capability, but not in reference to any specific system. In 2012, V.K. Saraswat, then the head of DRDO, noted that India had the components to put an anti-satellite weapon together. “We will not do a physical test [actual destruction of a satellite] because of the risk of space debris affecting other satellites,” Saraswat had said at the time. The differences between ballistic missile defense and ASAT technologies are minimal when the core function of the interceptor is to kinetically destroy an object at exo-atmospheric altitudes, be it on a ballistic trajectory or in low-earth orbit. Though Modi did not specify which interceptor was used in the test, it may have been India’s Prithvi Defense Vehicle, an exo-atmospheric hit-to-kill interceptor, similar to the U.S. SM-3 interceptor. An Indian ASAT capability may generate concerns in Pakistan that the capability portends a new era of ballistic missile defense capability in New Delhi.

## Вариант 3

Задание 1. Переведите текст письменно

<https://wakeup-world.com/2013/08/28/13-lies-about-gmos-and-gmo-labeling/>

A huge increase in the incidence and prevalence of chronic diseases has been reported in the United States over the last 20 years. Similar increases have been seen globally. The first GMO was introduced in 1977 and its use is accelerating with the advent of other genetically engineered (GE) crops. Evidence is mounting that GMO interferes with many metabolic processes in plants and animals. It affects the endocrine system and the balance of gut bacteria, it damages DNA and is a driver of mutations that lead

to cancer. In 2015, the Mexican Chapter of the Permanent Peoples' Tribunal has called on the Mexican government to ban the planting of GMO maize in the country. In the indictment that led to the ruling, social organizations spoke of GM crops as part of a "war" against food sovereignty. The ruling calls on the UN Food and Agriculture Organization to defend native and peasant maize varieties against genetic pollution and assume responsibility for preventing the impacts of decisions which may be made in Mexico, but could have global implications. The ruling also recommends that the UN Convention on Biodiversity launch special research – with participation from peasants and indigenous peoples – on how to safeguard the genetic center of origin of food crops and the rights of peasant and indigenous peoples who created them. GMOs have never been proven safe. The FDA requires no pre-market health safety studies, and the only long term peer-reviewed animal study conducted involving GMO corn sprayed with Monsanto's Round Up herbicide, found massive tumors, organ failure and premature death in rats. In addition, a growing body of peer-reviewed animal studies have linked these foods to allergies, organ toxicity, diabetes, cancer, autoimmune disorders, birth defects, high infant mortality rates, fertility problems, and sterility. Clearly, more independent, long term studies are warranted. Until GMOs are proven unequivocally safe, they should be labeled so consumers can avoid them if they choose. A report released from the non-GMO corn company De Dill, in Canada found GMO Corn has 14 parts-per-million (ppm) of Calcium while non-GMO corn has 6130 ppm, or 437 times more. According to the report, non-GMO corn also has 56 times more magnesium and seven times more manganese than GMO corn. Besides polluting the environment with herbicides and pesticides, GE crops are leading to biodiversity loss and the emergence of "super bugs" and "super weeds" that are threatening millions of acres of farmland, requiring the need for even more dangerous and toxic herbicides. GMO crops, and the toxic pesticides they are designed to withstand, are endangering numerous critical species, including the honey bee, frogs, birds, fish and the Monarch Butterfly. And don't forget our air and water. The island of Molokai in Hawaii has had its air and water quality destroyed by Monsanto's almost-2000-acre test facility. The same is true worldwide, with many areas around GMO farms reporting horrific bloody skin rashes, an uptick in asthma and toxic pesticides that leach into the groundwater. Professor Gilles-Eric Seralini's study on genetically modified (GM) NK603 corn was the only study of its kind to look at the long-term effects of GMOs on mammals. He proved that cancer was a byproduct of GMO exposure.

**Образец заданий зачета по переводу научного текста.**

**МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ**

**РОССИЙСКОЙ ФЕДЕРАЦИИ**

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ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ  
ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ  
ИНКЛЮЗИВНОГО ВЫСШЕГО ОБРАЗОВАНИЯ

**МОСКОВСКИЙ ГОСУДАРСТВЕННЫЙ  
ГУМАНИТАРНО-ЭКОНОМИЧЕСКИЙ УНИВЕРСИТЕТ**

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Утверждено на заседании кафедры романо-германских языков  
Протокол № от 201 г.

Зав. кафедрой Казиахмедова. С.Х

Специализация: Перевод и переводоведение.  
Дисциплина: «Перевод научного текста (первый иностранный язык)»

3 курс, 6 семестр

1. Ответьте на теоретический вопрос. (Приложение 1)
2. Выполните письменный перевод научного текста. (Приложение 1)

**Вопросы к зачету:**

1. Методы перевода научного текста.
2. Жанровая классификация научных текстов.
3. Стилистические и грамматические особенности научного текста.
4. Структурно-смысловые фиксации.
5. Грамматические вопросы перевода.
6. Прагматические вопросы перевода.
7. Компрессия.
8. Предпереводческий анализ текста.
9. Типы перевода.
10. Адекватный перевод.

Тексты практического задания для перевода:

Text.1 Выполните письменный перевод нижеследующего текста с английского языка на русский:

<https://www.livescience.com/64896-alcohol-consumption-harmful-age.html>

If America had an official alcoholic beverage, it would probably be beer. According to the Brewers Association, the overall U.S. beer market was worth \$101 billion in 2009. Over 205 million barrels of beer were sold (1 barrel equals 31 gallons of beer). In the same year, there were 1,595 breweries in the U.S. fermenting everything from light lagers to chocolaty stouts. The hops that give beer both its bitter taste and fruity aroma are also powerful cancer-fighters. Hops are a better source of cell-damage-fighting antioxidants than red wine, green tea and soy products, according to a 2000 study in the Journal of Agricultural and Food Chemistry. The source is xanthohumol, a tongue twister of a compound found only in hops. The bad news is that you'd have to drink about 118 gallons (450 liters) of beer a day to see a health benefit from the antioxidants in hops. Eventually, researchers hope to distill that hoppy, anti-cancer goodness down to a pill to help prevent cancer. In 2018, beer is the preferred beverage of men, according to data from a July 2010 Gallup poll. Of the 67 percent of U.S. adults who drink alcohol, 54 percent of men named beer as their top alcoholic beverage compared with 27 percent of women. (Liquor was equally preferred by both genders, while women heavily favored wine, a trend largely driven by women over 50.) Beer is more popular among young people, with half of 18- to 34-year-olds listing it as their top intoxicating beverage. Midwesterners are the top beer-drinkers in the United States, but not by much. Forty-six percent of Midwesterners said beer was their favorite drink, compared with 42 percent of Easterners, 40 percent of Westerners and 37 percent of Southerners. According to a 2009 study published in the journal Cancer Detection and Prevention, the more alcohol you drink, the higher your risk of cancer. Heavy drinkers have a risk of esophageal cancer seven times that of teetotalers. Drinking daily also increased the risk of stomach, colon, rectal, liver, pancreas, lung and prostate cancer. Alcohol consumption may be more harmful than thought, particularly for young and middle-age adults, a new study suggests. Although drinking alcohol in moderation is often thought to be good for you, the authors point out that many studies on the benefits of alcohol consumption involve people ages 50 and older. This paints a skewed picture of the benefits of alcohol, because it eliminates people who have died from alcohol consumption at younger ages.

Text.2 Выполните письменный перевод нижеследующего текста с английского языка на русский:

<https://www.theguardian.com/uk-news/truths-about-europes-refugee-crisis>

In 1901 UK population was 38.2m, by 2018 it had grown to 66,249m. What has driven this population growth is natural change. Every year since 1901 there's been more births than deaths. However, since 2001 and 2005 other factors have driven UK population growth, with 2018 increase of 119,460 people in the population due to immigration compared to an increase of 92,000 through natural change. Projected figures for the UK's population through to the middle of XX1 century is about 70mln. There were more than 3m Muslims in Britain. Young Muslims are being shut out of British society with just one in five adult Muslims in work, a report said in September 2017. Births. Actual births – overall there's been a decline in the number of live births. In 1901 there were nearly 1.1m but in 2017 there were 775,042. Birth rates – these are measured in relation to the number of live births per thousand of the population per year. So if you have a birth rate of 28 then 28 live babies were born for each thousand members of the population in that year. The UK birth rate has fallen from an average of 28 in 1901 to 11.69 in 2017. So what does this tell you? Fertility rate – this refers to the average number of children a woman would have in her lifetime. This has declined from 2.95 in the 1960s 'baby-boom' to a record low of 1.63 in 2001 rising to 1.8 children in 2006. Deaths/mortality rates – the actual numbers of people dying in the UK has remained fairly even despite a rising population. In 1901 there were 632,000 deaths while in 2005 there were 582,000 deaths. Though the number of deaths is consistent what else does this figure

tell you? Death rate – like the birth rate, the death rate this is measured per thousand. In 1901 it was 18.4 whereas in 2005 it was 9.4. Infant mortality rate – again this figure is per thousand and is measured in live births. Infant mortality rate in the UK has fallen from 142 in 1901 to 5.1 in 2005. Life expectancy – this is how long a person can expect to live. In 1901 it was 49 years by 2005 it was 81 years for females. Life expectancy does vary from country to country and within the different regions of a particular country. Family size. There were 7.7 million families with dependent children in the UK in 2012, 1 in 7 of which had three or more dependent children. Married couples had a higher average number of dependent children in their family than other family types, at 1.8 children per family compared with 1.7 on average. The UK has a higher percentage of households with three or more children than three-quarters of European Union countries. Aging. The UK has an aging population. In 2010, the number of people aged 40 and older reached 30.8m (50% of the population). In the UK, the ratio of people of working age to people over 65 could fall from **3.7** to 1 in 1999 to **2.1** to 1 in 2040.

Text.3 Выполните письменный перевод нижеследующего текста с английского языка на русский:

Scientists have identified 2 million species of living things. No one knows how many more are out there, and tens of thousands may be vanishing before we have even had a chance to encounter them. The Earth is ridiculously, burstingly full of life. Four billion years after the appearance of the first microbes, 400m years after the emergence of the first life on land, 200,000 years after humans arrived on this planet, 5,000 years (give or take) after God bid Noah to gather to himself two of every creeping thing, and 200 years after we started to systematically categorise all the world's living things, still, new species are being discovered by the hundreds and thousands. In the world of the systematic taxonomists – those scientists charged with documenting this ever-growing onrush of biological profligacy – the first week of November 2017 looked like any other. Which is to say, it was extraordinary. It began with 95 new types of beetle from Madagascar. But this was only the beginning. As the week progressed, it brought forth seven new varieties of micromoth from across South America, 10 minuscule spiders from Ecuador, and seven South African recluse spiders, all of them poisonous. A cave-loving crustacean from Brazil. Seven types of subterranean earwig. Four Chinese cockroaches. A nocturnal jellyfish from Japan. A blue-eyed damselfly from Cambodia. Thirteen bristle worms from the bottom of the ocean – some bulbous, some hairy, all hideous. Eight North American mites pulled from the feathers of Georgia roadkill. Three black corals from Bermuda. One Andean frog, whose bright orange eyes reminded its discoverers of the Incan sun god Inti. About 2m species of plants, animals and fungi are known to science thus far. No one knows how many are left to discover. Some put it at around 2m, others at more than 100m. The true scope of the world's biodiversity is one of the biggest and most intractable problems in the sciences. There's no quick fix or calculation that can solve it, just a steady drip of new observations of new beetles and new flies, accumulating towards a fathomless goal. But even as thousands of new species are being discovered every year, thousands more seem to be disappearing, swept away in an ecological catastrophe that has come to be known as the sixth extinction. There have been five such disasters in the past. The most famous (and recent) is the end-Cretaceous extinction, the one that killed off the dinosaurs 66m years ago. The most destructive was the Permian, the one that cleared the way for the dinosaurs 190m years before that. To know if we are really in the midst of a sixth extinction, scientists need to establish both the rate at which species are currently vanishing, and the rate at which they would go extinct without human activity (known as the “background rate”). In 2015, using a census of all known vertebrates, a team of American and Mexican scientists argued that animal species are going extinct “up to 100 times” faster than they would without us – a pace of disappearance on a par with the extinction that took out the dinosaurs.

Text.4 Выполните письменный перевод нижеследующего текста с английского языка на русский:

## Memories May Not Live in Neurons' Synapses

The finding could mean recollections are more enduring than expected and disrupt plans for PTSD treatments. As intangible as they may seem, memories have a firm biological basis. According to textbook neuroscience, they form when neighboring brain cells send chemical communications across the synapses, or junctions, that connect them. Each time a memory is recalled, the connection is reactivated and strengthened. The idea that synapses store memories has dominated neuroscience for more than a century, but a new study by scientists at the University of California, Los Angeles, may fundamentally upend it: instead memories may reside *inside* brain cells. If supported, the work could have major implications for the treatment of post-traumatic stress disorder (PTSD), a condition marked by painfully vivid and intrusive memories. More than a decade ago scientists began investigating the drug propranolol for the treatment of PTSD. Propranolol was thought to prevent memories from forming by blocking production of proteins required for long-term storage. Unfortunately, the research quickly hit a snag. Unless administered immediately after the traumatic event, the treatment was ineffective. Lately researchers have been crafting a work-around: evidence suggests that when someone recalls a memory, the reactivated connection is not only strengthened but becomes temporarily susceptible to change, a process called memory reconsolidation. Administering propranolol (and perhaps also therapy, electrical stimulation and certain other drugs) during this window can enable scientists to block reconsolidation, wiping out the synapse on the spot. The possibility of purging recollections caught the eye of David Glanzman, a neurobiologist at U.C.L.A., who set out to study the process in *Aplysia*, a sluglike mollusk commonly used in neuroscience research. Glanzman and his team zapped *Aplysia* with mild electric shocks, creating a memory of the event expressed as new synapses in the brain. The scientists then transferred neurons from the mollusk into a petri dish and chemically triggered the memory of the shocks in them, quickly followed by a dose of propranolol. Initially the drug appeared to confirm earlier research by wiping out the synaptic connection. But when cells were exposed to a reminder of the shocks, the memory came back at full strength within 48 hours. "It was totally reinstated," Glanzman says. "That implies to me that the memory wasn't stored in the synapse." The results were recently published in the online open-access journal eLife. If memory is not located in the synapse, then where is it? When the neuroscientists took a closer look at the brain cells, they found that even when the synapse was erased, molecular and chemical changes persisted after the initial firing within the cell itself. The engram, or memory trace, could be preserved by these permanent changes. Alternatively, it could be encoded in modifications to the cell's DNA that alter how particular genes are expressed. Glanzman and others favor this reasoning. Eric R. Kandel, a neuroscientist at Columbia University and recipient of the 2000 Nobel Prize in Physiology or Medicine for his work on memory, cautions that the study's results were observed in the first 48 hours after treatment, a time when consolidation is still sensitive. Though preliminary, the results suggest that for people with PTSD, pill popping will most likely not eliminate painful memories. "If you had asked me two years ago if you could treat PTSD with medication blockade, I would have said yes, but now I don't think so," Glanzman says. On the bright side, he adds, the idea that memories persist deep within brain cells offers new hope for another disorder tied to memory: Alzheimer's.

Text.5 Выполните письменный перевод нижеследующего текста с английского языка на русский:

<https://www.scientificamerican.com/article/secrets-of-ant-rafts-revealed/>

To negotiate floods and cross streams, fire ants band together — literally — linking together to form rafts and bridges in a feat of social cooperation and biophysics. Now, engineers have made a close study of the ants' architectural technique, pointing the way towards new approaches for robot designers and materials scientists. To understand the properties of the ant structures, David Hu, a mechanical engineer at the Georgia Institute of Technology in Atlanta, sought to observe not just the surface of the ant clumps but the structure and joints underneath. First, Hu and his team collected ant colonies — shovelling them, dirt and all, into buckets. After separating out the ants from the dirt, they then put 100 or so ants into a cup and swirled, causing the ants to form into a ball. (no water necessary -- they come together almost like dough). The researchers then froze the ball with liquid nitrogen so they could examine it in a micro-computed-tomography scanner to come up with a 3-D picture. But the heat of the scanner melted the ball into a heap of dead ants. After months of experimenting with techniques to keep it together, lead author Paul Foster, now at the University of Michigan, found an unlikely source of inspiration in crack cocaine — specifically, in a method of vaporizing the drug to inhale it. “We did the same process — not with crack, but glue,” says Hu, adding that the authors decided against calling it the ‘crack-pipe method’ in their paper. The researchers heated the glue in an aluminium pot over a flame, with the frozen ant ball suspended on mesh above. The glue vapour rose and lightly coated the ants. Hu and his team found that the ants had grabbed hold of one another with adhesive pads on their legs, which they stretched out to create pockets of air. They also tended to orient themselves perpendicularly to one another, distributing their weight and creating a light, buoyant structure. The formation seems to take advantage of the ants’ different sizes, with smaller ants slotting neatly in between larger ones to add more connections. Each ant averaged 14 connections to fellow ants. The study is published today in the *Journal of Experimental Biology*. Radhika Nagpal, who creates biologically inspired robots at Harvard University in Cambridge, Massachusetts, says that Hu’s ants could make great models for modular robots. “There’s lots of interesting outcomes of this work,” she says. “Imagine robots that need to construct a barrier or patch a hole during a disaster response.” Rather than building one perfect robot, she notes, designers are increasingly exploring building a “colony of simple robots that use their bodies and the connections between them to build new structures.” Most projects in this vein have used geometric robots with precise connections. But ants do not create a perfect lattice, suggesting a sloppier, more organic approach in which robot shapes are varied and irregular and connections between them are inexact, Nagpal says. Hu thinks that the properties of ant structures might not only inform the design of robot swarms, but also the design of ‘smart’ materials that assemble themselves in response to temperature, light or other variables. Hu is working on getting larger ant structures — recognizably distinct as bridges, rafts and other forms — into a bigger scanner to begin detailing the properties of the different functional shapes. And once they are frozen and coated in glue, they will last forever, Hu says. “One day,” he jokes, “we will have a miniature museum of ant structures.”

Text.6 Выполните письменный перевод нижеследующего текста с английского языка на русский:

<https://www.scientificamerican.com/article/animals-worldwide-stick-close-to-home-when-humans-move-in/>

Animals living in landscapes used intensively by people travel, on average, only half to one-third as far as animals in more remote areas do—a pattern that's consistent across dozens of species worldwide. The finding, published today in *Science*<sup>1</sup>, has implications for important ecological processes linked to animal movement, such as seed transport and nutrient cycling. And it could spell trouble for the animals themselves as the climate changes. More than 100 scientists around the world shared satellite-tracking data for 803 mammals from 57 species, from impala (*Aepyceros melampus*) to olive baboons (*Papio anubis*) and grizzly bears (*Ursus arctos*). The data charted the animals’ movements over timescales of up to ten days, and were correlated with a Human Footprint Index that measures how deeply our species has impacted a place, using metrics such as population density and the presence of roads and night-time lights. There’s likely to be more than one explanation for the animals’ reduced mobility, says Marlee Tucker, a macro-ecologist at Goethe University in Frankfurt, Germany, who led the



study. "Some animals might be sort of trapped, caught in fragments that are suitable for them, surrounded by a landscape that is not suitable—a road, a fence or a lot of people." But others might be tethering themselves to attractive resources, such as edible crops or water sources intended for livestock. That helps to explain the behaviour of a herd of elk (*Cervus elaphus*) near Banff National Park in Canada tracked by ecologist Mark Hebblewhite of the University of Montana in Missoula. Many have stopped migrating between summer and winter range. "They've given up their old wild ways," Hebblewhite says. The same dynamic is playing out with migrating ungulates across the western United States and Canada, Hebblewhite says. Many now spend the summer feasting on irrigated alfalfa crops in areas they once abandoned in warm months. "The point of migrating was to get access to what's under that [sprinkler] in August"—calories. "Reduced movement can affect ecosystems because it means that seeds and nutrients in dung might not be spread so widely, or because herbivores such as elk graze smaller areas more intensively. It can affect the animals, as well: crowding together in a small area could increase the risk of disease. "It is definitely concerning," Tucker says. Conservation biologist Reed Noss, president of the Florida Institute for Conservation Science in Chuluota, says the findings underscore the importance of corridors of land that allow wildlife to move between core areas of habitat. As the climate changes and the seas rise, these features enable animals to search widely for food and mates—and eventually seek more hospitable climates. Where human barriers such as roads and cities can't be perforated with wildlife corridors, or where animals can't move quickly enough to keep up with changes in their environment, some species may need help moving, Noss says. "It seems like we will have little choice but to intervene if we don't want to lose species." Hebblewhite says that knowing that human activity is reducing species movement "galvanizes" him to fight for more wildlife-friendly open space—even rail-thin corridors—to help animals roam.

Text.7 Выполните письменный перевод нижеследующего текста с английского языка на русский:

<https://www.scientificamerican.com/article/large-scale-study-shows-w/>

Over the past few decades, wildlife areas have become increasingly fragmented. In response, many conservationists have argued that, at the very least, developers should leave land that links separated habitats undisturbed in order to improve the health of the remaining ecosystems. But how much these habitat corridors truly help has been unclear because scientific studies of their effects have been carried out on small scales or have failed to control for confounding factors such as the type of land chosen for the corridor. Now the results of a large-scale study may help resolve the issue. According to a report published online this week by the *Proceedings of the National Academy of Sciences*, wildlife corridors enhance crucial plant and animal interactions and significantly increase plant pollination. In their ambitious experiment, Joshua J. Tewksbury of the University of Florida and his colleagues created eight similar landscapes in the Savannah River Site in South Carolina, a federally protected research area. Each of the locations featured five patches of logged and burned ground cover surrounded by mature forest (*see image for an overhead view*). To test the interactions between patches, the team planted male holly bushes in the middle site and female holly bushes in the four surrounding sites, one of which was connected to the central patch. Holly is not naturally present in the forest, and the female plants cannot bear fruit unless they are pollinated. Compared with plants in unconnected patches, significantly more of those in the field linked to the central patch by a corridor bore fruit: the proportion of flowers that produced berries was 69 percent higher. The researchers also tested the effect corridors had on seed dispersal by birds. After marking thousands of seeds in the central patch with a sticky powder visible under fluorescent light, the scientists analyzed bird droppings containing ingested seeds to track the animals' travels. According to the report, nearly 20 percent more fluorescent fecal samples were collected in connected patches than in isolated ones, indicating that the corridors facilitate the birds' movement. Says Tewksbury: "Our study suggests that these corridors do help in connecting populations, and

theoretically, they should help sustain networks of populations existing in increasingly fragmented landscapes."

Text.8 Выполните письменный перевод нижеследующего текста с английского языка на русский:

## INNOVATION

The term innovation derives from the Latin word *innovatus* (to renew or change). Although the term is broadly used, innovation generally refers to the creation of better or more effective products, processes, technologies, or ideas that are accepted by markets, governments, and society. Innovation differs from invention or renovation in that innovation generally signifies a substantial positive change compared to incremental changes. Inter-Disciplinary Views. Due to its widespread effect, innovation is an important topic in the study of economics, business, entrepreneurship, design, technology, sociology, and engineering. In society, innovation aids in comfort, convenience, and efficiency in everyday life. For instance, the benchmarks in railroad equipment and infrastructure added to greater safety, maintenance, speed, and weight capacity for passenger services. These innovations included changing from wood to steel cars, from iron to steel rails, stove-heated to steam-heated cars, gas lighting to electric lighting, diesel-powered to electric-diesel locomotives. By mid-20th century, trains were making longer, more comfortable, and faster trips at lower costs for passengers. Other areas that add to everyday quality of life include: the innovations to the light bulb from incandescent to compact fluorescent and LEDs which offer longer-lasting, less energy-intensive, brighter technology; adoption of modems to cellular phones, paving the way to smart phones which meets anyone's internet needs at any time or place; cathode-ray tube5 to flat-screen LCD televisions and others. Business and Economics. In business and economics, innovation is the catalyst to growth. With rapid advancements in transportation and communications over the past few decades, the old world concepts of factor endowments and comparative advantage7 which focused on an area's unique inputs8 are outmoded for today's global economy. Now, as Harvard economist Michael Porter points out competitive advantage, or the productive use of any inputs, which requires continual innovation, is paramount for any specialized firm to succeed. Economist Joseph Schumpeter, who contributed greatly to the study of innovation, argued that industries must incessantly revolutionize the economic structure from within, that is innovate with better or more effective processes and products, such as the shift from the craft shop to factory. In addition, entrepreneurs continuously look for better ways to satisfy their consumer base with improved quality, durability, service, and price which come to fruition in innovation with advanced technologies and organizational strategies. One prime example is the explosive boom of *Silicon* startups9 out of the *Stanford Industrial Park*. In 1957, dissatisfied employees of Shockley Semiconductor, the company of Nobel laureate and co-inventor of the transistor William Shockley, left to form an independent firm, *Fairchild Semiconductor*. After several years, *Fairchild* developed into a formidable presence in the sector. Eventually, these founders left to start their own companies based on their own, unique, latest ideas, and then leading employees started their own firms. Over the next 20 years, this snowball process launched the momentous startup company explosion of information technology firms. Essentially, *Silicon Valley* began as 65 new enterprises born out of Shockley's eight former employees.

Text.9 Выполните письменный перевод нижеследующего текста с английского языка на русский:

The adjective is a part of speech which expresses the categorical meaning of property of a substance, e.g.: hard; peaceful, green, etc. The category of comparison expresses the quantitative characteristics of the quality rendered by the adjective. There are three forms which constitute this category: the positive degree, the comparative degree, and the superlative degree forms of the adjective.

The basic form, known as the positive degree, has no special formal mark, e.g.: tall, beautiful: the comparative degree is marked by two kinds of forms; synthetic forms with the suffix "-er" and

analytical forms with the auxiliary- word more, e.g.: taller, more beautiful; the superlative degree is also formed either synthetically with the help of the grammatical suffix "-est", or analytically with the help of the auxiliary word most, e.g.: tallest, most beautiful. Also, there are suppletive forms of the degrees of comparison, e.g.: bad - worse - worst. The positive degree denotes either the absence of comparison, or equality/inequality in special constructions of comparison, e.g.: He is tall; He is as tall as my brother; He is not so tall as my brother.

The comparative degree denotes relative superiority, e.g.: He is taller than my brother. The superlative degree denotes absolute superiority, e.g.: He is the tallest man I've ever seen. The superlative degree can be used instead of the positive degree in contexts where no comparison is meant, to denote a very high degree of a certain quality, cf.: She is a most unusual woman (She is an extremely unusual woman); It was most generous of you (It was very generous of you). This kind of grammatical transposition is known as "the elative superlative". Thus, the superlative degree is used in two senses: the absolute superiority and the elative superiority (a very high degree of a certain quality). The formal mark of the difference between the two cases is the use of either the indefinite or zero articles with the noun modified by the adjective in the superlative degree, e.g.: It was a most generous gesture; a sensation of deepest regret.

The quantitative evaluation of a quality involves not only an increase in its amount, but also its reduction, rendered by the combination of the adjective with the words less and least, e.g.: important, less important, least important. These combinations can be treated as specific analytical forms of the category' of comparison: they denote "negative comparison" and are formed with the help of the auxiliary words less and least; the regular synthetic and analytical forms denoting an increase in the amount of a quality may be specified as "direct comparison", or "positive comparison" forms. Thus, the whole category of comparison is constituted not by three forms, but by five forms: one positive degree form (important), two comparative degree forms, direct and reverse (more important, less important), and two superlative degree forms: direct and reverse (most important, least important).

Text.10 Выполните письменный перевод нижеследующего текста с английского языка на русский:

There are numerous myths about the origins of money. The concept of money is often confused with coinage. Coins are a relatively modern form of money. Their first appearance was probably in Asia in the 7th century BC. And whether these coins were used as money in the modern sense has also been questioned.

To determine the earliest use of money, we need to define what we mean by money. We will return to this issue shortly. But with any reasonable definition the first use of money is as old as human civilization. The early Persians deposited their grain in state or church granaries. The receipts of deposit were then used as methods of payment in the economies. Thus, banks were invented before coins. Ancient Egypt had a similar system, but instead of receipts they used orders of withdrawal – thus making their system very close to that of modern checks. In fact, during Alexander the Great's period, the granaries were linked together, making checks in the 3rd century BC more convenient than British checks in the 1980s.

However, money is older than written history. Recent anthropological and linguistic research indicates that not only is money very old, but it's origin has little to do with trading, thus contradicting another common myth. Rather, money was first used in a social setting. Probably at first as a method of punishment.

Early Stone Age man began the use of precious metals as money. Until the invention of coins, metals were weighed to determine their value. Counting is of course more practical, the first standardized ingots appeared around 2200 BC. Other commonplace objects were subsequently used in the abstract sense, for example miniature axes, nails, swords, etc.

Full standardization arrived with coins, approximately 700 BC. The first printed money appeared in China, around 800 AD. The first severe inflation was in the 11th century AD. The Mongols adapted the

bank note system in the 13th century, which Marco Polo wrote about. The Mongol bank notes were “legal tender”, i.e. it was a capital offense to refuse them as payment. By the late 1400s, centuries of inflation eliminated printed bank notes in China. They were reinvented in Europe in the 17th century.

Контролируемые компетенции: ОК-6, ПК-1, 4, 8, 14, 17

Оценка компетенций осуществляется в соответствии с Таблицей 4.

Кафедра романо-германских языков  
(наименование кафедры)

Составитель: д.и.н., проф., профессор кафедры романо-германских языков Репко С.И.  
(подпись)

«\_\_» \_\_\_\_\_ 20\_\_ г.

Утверждено на заседании кафедры романо-германских языков от «\_\_» \_\_\_\_\_ 20\_\_ г.  
Протокол № \_\_\_\_

Зав. кафедры романо-германских языков

С. Казиахмедова