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Федеральное государственное автономное образовательное учреждение
высшего образования

«ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ ПРОСВЕЩЕНИЯ»

(ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ ПРОСВЕЩЕНИЯ)

Кафедра иностранных языков

УТВЕРЖДЕН

на заседании кафедры

Протокол от « 4 » апреля 2024 г., № 10

Зав. кафедрой



Сарычева Л.В.

ФОНД ОЦЕНОЧНЫХ СРЕДСТВ

по дисциплине (модулю)

«Иностранный язык» (английский язык)

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1.Перечень компетенций с указанием этапов их формирования в процессе освоения образовательной программы

Код и наименование компетенции	Этапы формирования
УК-4. Способен осуществлять деловую коммуникацию в устной и письменной формах на государственном языке Российской Федерации и иностранном (ых) языке (ах).	1. Работа на учебных занятиях 2. Самостоятельная работа

Описание показателей и критериев оценивания компетенций на различных этапах их формирования, описание шкал оценивания

Оцениваемые компетенции	Уровень сформированности	Этапы формирования	Описание показателей	Критерии оценивания	Шкала оценивания
УК-4	Пороговый	1. Работа на учебных занятиях 2. Самостоятельная работа	Знать: базовую лексику и выражения, а также лексику, связанную со специальностью Уметь: общаться в большинстве	Выполнение лексико-грамматических упражнений Тестирование	Шкала оценивания лексико-грамматического упражнения, шкала оценивания

			<p>типичных ситуаций, которые могут быть при поездке в страну изучаемого языка; понимать тексты на повседневные и профессиональные темы, в которых используются достаточно употребительные слова и конструкции</p>	<p>ие</p> <p>Проект (защита презентации)</p> <p>Аннотация</p> <p>Деловое письмо</p> <p>Устный ответ</p>	<p>я делового письма, шкала оценивания устного ответа, шкала оценивания проекта (защита презентации), шкала оценивания тестирования, шкала оценивания аннотации</p>
УК-4	Продвинутый	<p>1. Работа на учебных занятиях</p> <p>2. Самостоятельная работа</p>	<p>Знать: основные жанры устной и письменной речи, лексические и грамматические особенности, стилистические особенности, терминологический аппарат своей специальности, широкий спектр узкоспециальных выражений и конструкций</p> <p>Уметь: понимать развернутые</p>	<p>Выполнение лексико-грамматических упражнений</p> <p>Тестирование</p> <p>Проект (защита презентации)</p> <p>Аннотация</p> <p>Деловое письмо</p>	<p>Шкала оценивания лексико-грамматического упражнения, шкала оценивания делового письма, шкала оценивания устного ответа, шкала оценивания проекта (презентац</p>

			<p>доклады и лекции по знакомой теме; написать подробное сообщение на разные темы; анализировать и переводить статьи по специальности и инструкции, касающиеся профессиональной деятельности</p> <p>Владеть: профессионально-ориентированной межкультурной компетенцией</p>	Устный ответ	ии), шкала оценивания тестирования, шкала оценивания аннотации
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Шкала оценивания выполнения лексико-грамматических упражнений

	Критерии оценивания		
Семестр	работа выполнена частично, с большим количеством ошибок	работа выполнена в полном объеме, но с ошибками	работа выполнена в полном объеме, допускаются незначительные недочеты
1	5 баллов	10 баллов	15 баллов
2	5 баллов	10 баллов	15 баллов
3	5 баллов	10 баллов	15 баллов

Шкала оценивания тестирования

Семестр	41-60 % верных ответов	61-80 % верных ответов	81-100% верных ответов
1	8-11 баллов	12-15 баллов	16-20 баллов
2	5-8 баллов	9-11 баллов	12-15 баллов
3	2-4 балла	5-7 баллов	8-10 баллов

Шкала оценивания проекта (защита презентации)

<i>Критерий оценки</i>	<i>Показатели</i>	<i>Баллы</i>
План работы	План работы над проектом есть	2
	План работы отсутствует	0
Глубина раскрытия темы проекта	Тема раскрыта фрагментарно	2
	Тема раскрыта полностью	4
	Знания автора проекта превзошли рамки проекта	6
Разнообразие источников информации, целесообразность их использования	Большая часть информации не относится к теме	2
	Использован незначительный объём подходящей информации из ограниченного числа однотипных источников	4
	Представлена полная информация из разнообразных источников	6
Соответствие требованиям оформления	Отсутствует установленный правилами порядок, структура Внешний вид и речь автора не	2

письменной части и презентации	соответствуют правилам проведения презентации	
	<p>Предприняты попытки оформить работу в соответствии с установленными правилами</p> <p>Внешний вид и речь автора соответствуют правилам проведения презентации, но автор не владеет культурой общения, не уложился в регламент</p>	4
	<p>Чёткое и грамотное оформление</p> <p>Внешний вид и речь автора соответствуют правилам проведения презентации, автор владеет культурой общения, уложился в регламент, ему удалось вызвать большой интерес</p>	6
	ИТОГО	20 баллов

Шкала оценивания устного ответа

Критерий оценки	Баллы
Коммуникативная задача не решена. Высказывание сводится к отдельным словам и словосочетаниям.	1
Коммуникативная задача не решена. В высказывании отсутствуют логика и связность. Используемые языковые и речевые средства не соответствуют ситуации / теме / проблеме. Объем высказывания значительно ниже	2

программных требований. Речь очень медленная, со значительным количеством пауз. Допущено значительное количество ошибок, препятствующих коммуникации.	
Коммуникативная задача решена частично. В высказывании отсутствуют логика и последовательность изложения. Оно носит незавершенный характер. Используемые языковые и речевые средства часто не соответствуют ситуации / теме / проблеме. Объем высказывания значительно ниже программных требований. Речь не беглая, со значительным количеством пауз. Компенсаторные умения не используются. Допущено значительное количество произносительных, лексических и грамматических ошибок, затрудняющих коммуникацию.	3
Коммуникативная задача решена частично. В высказывании значительно нарушена логика и последовательность изложения. Оно носит незавершенный характер, отсутствует вывод. Используемые языковые и речевые средства не всегда соответствуют ситуации / теме / проблеме. Объем высказывания ниже программных требований. Речь не беглая, со значительным количеством пауз. Компенсаторные умения не используются. Допущен ряд произносительных и лексических ошибок и значительное количество грамматических ошибок, затрудняющих коммуникацию.	4
Коммуникативная задача решена не полностью. В высказывании значительно нарушены логика и последовательность изложения. Отсутствует вывод, не выражено свое отношение к обсуждаемой теме / проблеме. Используемые языковые и речевые средства не всегда соответствуют ситуации / теме / проблеме, они недостаточно разнообразны. Объем высказывания ниже программных требований. Речь недостаточно беглая. Компенсаторные умения не используются. Допущен ряд	5

произносительных, лексических и грамматических ошибок, частично влияющих на процесс коммуникации.	
<p>Коммуникативная задача в основном решена.</p> <p>Высказывание носит заверченный характер, но имеются нарушения логики и последовательности изложения.</p> <p>Отсутствует вывод, не выражено свое отношение к обсуждаемой теме / проблеме. Используемые языковые и речевые средства не всегда соответствуют ситуации / теме / проблеме, они недостаточно разнообразны. Используемые связующие элементы не всегда адекватны решаемой задаче.</p> <p>Объем высказывания несколько ниже программных требований. Речь недостаточно беглая. Компенсаторные умения используются недостаточно. Допущен ряд произносительных, лексических и грамматических ошибок, частично влияющих на процесс коммуникации.</p>	6
<p>Коммуникативная задача решена относительно полно.</p> <p>Высказывание носит заверченный характер, но имеются незначительные нарушения логики и последовательности.</p> <p>Отсутствует вывод, есть затруднения в выражении своего отношения к обсуждаемой теме / проблеме. Используемые языковые и речевые средства в основном соответствуют ситуации / теме / проблеме, но их разнообразие ограничено.</p> <p>Используемые связующие элементы в основном адекватны решаемой задаче. Объем высказывания соответствует программным требованиям. Речь достаточно беглая. В случае затруднений используются компенсаторные умения.</p> <p>Допущены отдельные произносительные, лексические и грамматические ошибки.</p>	7
<p>Коммуникативная задача решена относительно полно.</p> <p>Высказывание носит заверченный характер, построено логично и связно. Есть затруднения в выражении своего отношения к обсуждаемой теме / проблеме. Используемые языковые и речевые средства соответствуют ситуации /</p>	8

<p>теме / проблеме и варьируются в пределах изученного материала. Используемые связующие элементы в основном адекватны. Объем высказывания соответствует программным требованиям. Речь беглая. В случае затруднений используются компенсаторные умения. Допущены отдельные произносительные, лексические и грамматические ошибки, не препятствующие коммуникации.</p>	
<p>Коммуникативная задача решена полностью. Высказывание построено логично и связно и имеет завершенный характер. Выражено свое отношение к обсуждаемой теме / проблеме. Используемые языковые и речевые средства соответствуют ситуации / теме / проблеме и варьируются в пределах изученного материала. Используются адекватные связующие элементы. Объем высказывания соответствует программным требованиям. Речь беглая. В случае необходимости используются компенсаторные умения. Допущены единичные произносительные и грамматические ошибки, не препятствующие коммуникации.</p>	9
<p>Коммуникативная задача решена полностью. Высказывание построено логично, связно и имеет завершенный характер. Выражено свое отношение к обсуждаемой теме / проблеме. Используемые языковые и речевые средства соответствуют ситуации / теме / проблеме и варьируются в пределах изученного материала. Используются адекватные связующие элементы. Объем высказывания соответствует программным требованиям. Речь беглая. Допущены единичные произносительные ошибки, не препятствующие коммуникации</p>	10

Шкала оценивания аннотации

Критерий оценки	Баллы
Аннотация отражает полностью содержание текста. Структура четкая, отражает логическое деление текста. Использованы речевые клише. Грамматические и пунктуационные ошибки отсутствуют.	10 баллов
Аннотация не совсем точно передает содержание текста. Структура аннотации не достаточно верно передает логическое членение текста. Присутствуют незначительные грамматические и пунктуационные ошибки (2-4).	6 баллов
Аннотация частично передает содержание текста. Структура аннотации не соответствует логике построения текста. Речевые клише использованы неуместно, присутствуют грамматические и пунктуационные ошибки.	2 балла

Шкала оценивания делового письма

Критерий оценки	Баллы
1. Структура и оформление в соответствии с видом делового письма. Данный критерий означает, что письмо оформлено по правилам, есть четкая структура письма как в оформлении так и в самом письме.	2
2. Содержание. В данном критерии учитывается насколько полно, точно и правильно было написано письмо/документ на заданную тему. Оцениваются идеи и последовательность информации в раскрытии письма.	3
3. Лексика. Оценивается разнообразие лексических структур, используемых для составления документа/написание письма	3
4. Грамматика. Оценивается разнообразие, сложность и точность грамматических конструкций.	2
Итого	10

3. Контрольные задания или иные материалы, необходимые для оценки знаний, умений, навыков и (или) опыта деятельности, характеризующих этапы формирования компетенций в процессе освоения образовательной программы

Текущий контроль

УК-4. Способен осуществлять деловую коммуникацию в устной и письменной формах на государственном языке Российской Федерации и иностранном (ых) языке (ах).

Знать: базовую лексику и выражения, а так же лексику, связанную со специальностью

Задания, необходимые для оценивания сформированности УК-4 на пороговом уровне

1 семестр

Лексико – грамматические упражнения

Выберите правильный вариант ответа.

My sister and I are very different, __ (1) __ we get on well together. She likes staying at home in the evening __ (2) __ watching television with parents. __ (3) __ I prefer going out with my friends. We like to go to clubs or the cinema. Sometimes we just go to a café. I have exams soon, __ (4) __ I'm not going out very much these days. My sister is six years older than me, __ (5) __ she works in a bank. She's trying to save some money __ (6) __ she's going to get married this year. Her fiancé's name is Ferdinand. __ (7) __, we all call him Freddy. People say I look like my sister __ (8) __ we both have brown eyes __ (9) __ dark hair. __ (10) __, we are very different in character. She's very quiet, __ (11) __ I'm a lot more sociable.

- | | | | |
|---------------|--------|--------|------------|
| 1. A) and | B) but | C) so | D) because |
| 2. A) however | B) so | C) and | D) because |

3. A) Because B) And C) So D) But
4. A) so B) however C) but D) and
5. A) however B) so C) because D) and
6. A) and B) so C) because D) but
7. A) However B) So C) But D) And
8. A) so B) because C) and D) however
9. A) but B) so C) however D) and
10. A) But B) So C) However D) And
11. A) however B) but C) and D) so

Тестирование

1. “_____ her name Eliza?”

“No, _____.”

- A) What / it isn't B) Is / she isn't C) Is / it is not D) Is / it isn't

2. “Are you from Australia?”

“No, _____.”

- A) I'm not B) I amn't C) I are not D) I not

3. I'm _____ home.

- A) in B) on C) at D) from

4. I live _____ an apartment _____ two American boys.

- A) in / of B) at / with C) in / with D) of/with

5. “_____ _____ is a hamburger and chips?”

“Three pounds fifty.”

- A) How many B) How often C) How much D) How long

6. Rolls-Royce cars are _____ .

A) cheap B) blue C) expensive D) tall

7. This is those _____ toy.

A) kid's B) kid C) kids's D) kids'

8. They're not his _____ mistakes.

A) friend's B) friend C) friends D) friends's

9. A: Where _____ your parents _____ ?

B: In the Ministry of Education.

A) do / do B) do / work C) are / work D) work /

-

10. Why _____ you like _____ in the hotel?

A) do / working B) do / work C) does / working D) does / work

11. _____ there _____ chairs in the class?

A) Are / a B) Are / some C) Are / there D) Are / any

12. I like living here _____ it's near the shops.

A) because B) so C) and D) but

2 семестр

Лексико – грамматическое упражнение

Dennis Heal __ (1) __ a politician. He __ (2) __ to Oxford University in 1975, and in 1982 he __ (3) __ a Member of Parliament. He __ (4) __ an MP since then. He __ (5) __ Defense Minister from 1989- 95. He __ (6) __ three books, including his autobiography "The Time of my Life", and a spy story called "The Time to Run". He is married to the artist Edna Heal, and they have two children. They __ (7) __ in Oxford for 10 years, then they __ (8) __ to London in 1995. They now __ (9) __ in a house in Queen Square in central London.

- | | | | |
|-------------------|---------------|--------------|---------------|
| 1. A) was | B) is | C) is being | D) has been |
| 2. A) go | B) has gone | C) went | D) goes |
| 3. A) became | B) become | C) becomes | D) has become |
| 4. A) was | B) is being | C) is | D) has been |
| 5. A) was | B) is | C) has been | D) were |
| 6. A) has written | B) wrote | C) write | D) writes |
| 7. A) lives | B) has lived | C) lived | D) live |
| 8. A) move | B) moved | C) is moving | D) has moved |
| 9. A) lives | B) have lived | C) lived | D) live |

Тестирование

1. A: _____ was she born?

B: She _____ born in New Zealand.

- A) Where / was B) Where / were C) When / were D) When / was

2. A: _____ of food _____ our cook cook?

B: Italian & French food.

- A) What of / can B) Which / can C) What kind / can D) What / can

3. I work _____ 6 a.m. _____ 6 p.m.

- A) from / to B) to / at C) at / at D) at / until

4. What's _____ television this evening?

- A) at B) on C) in D) of

5. Would you like _____ milk?

- A) a B) some C) any D) an

6. Prague is one of the _____ cities in Europe,
 A) most beautiful B) more beautiful C) beautiful D) the most beautiful
7. Life in New York is very _____.
 A) excited B) exciting C) exciter D) excitedly
8. A : _____ is the weather like _____ ?
 B : _____ is sunny & warm. But yesterday _____ cold.
 A) What / today / it / was B) How / today / it / was
 C) What / it / today / - D) How / it / today / was
9. Tom and Tim _____ for lunch tomorrow.
 A) to come B) coming C) came D) are coming
10. A: What _____ she _____ now?
 B: I don't know.
 A) does / do B) do / do C) is / doing D) is / do
11. New York is _____ Paris.
 A) dirty B) dirtier than C) the dirtiest D) dirtier
12. At first we draw _____ then _____.
 A) quickly / slowly B) quick / slowly
 C) quickly / slow D) quick / slow

3 семестр

Лексико – грамматическое упражнение

1. Software	A. The brain of the computer
2.Peripherals	B. Physical parts that make up a computer system
3.Main memory	C. Programs which can be used on a

	particular computer system
4. Hard drive	D. The information which is presented to the computer
5. Input	E. Results produced by the computer
6. Output	F. Input devices attached to the CPU
7. Ports	G. Section that holds data while it is processed
8. CPU	H. Magnetic device used to store information
9. Hardware	I. Sockets into which an external device may be connected

Тестирование

1. Her hands are dirty. She'd _____ a bar of soap.

- A) like B) likes C) to like D) liked

2. It's dark in here. Can you _____ the light ?

- A) turning on B) turn on C) to turn on D) will turn on

3. Let him _____ two tubes of toothpaste.

- A) to buy B) buying C) buy D) buys

4. He usually _____ coffee but today he _____ tea.

- A) drank / is drinking B) drunk / drinks
C) drinks / is drinking D) drinks / was drinking

5. The plane _____ at 11.45.

- A) leaves B) leave C) are leaving D) to leave

6. Fifty million years ago there _____ no people.

- A) were B) was C) are D) weren't

7. A: _____?

B : Not yet.

- A) Have you read today's paper ? B) Did you sleep well last night ?
- C) Do you usually get up early? D) Are you early?

8. A: Who wrote “War and Peace”?

B: It _____ by Leo Tolstoy.

- A) is written B) wrote C) writes D) was written

9. If she _____ him, she would marry him.

- A) loved B) would love C) loves D) had loved

10. A: What started the fire?

B: Nobody knows _____.

- A) who started the fire B) what started the fire
- C) what starts the fire D) who'd started the fire

11. The lights went out _____.

- A) when the eight o'clock news started
- B) after I have finished my homework
- C) as soon as you arrive home
- D) before the Prime Minister enters the conference hall

12. We went out_____ the bell rang.

- A) so B) although C) after D) until

13. When I was a child I _____ drink a lot of milk.

- A) should B) may C) used to D) need

14. I'm waiting _____ the Paris plane.

- A) at B) after C) for D) before

15. I'm afraid of _____ mistakes.

- A) to make B) made C) make D) making

Уметь: общаться в большинстве типичных ситуаций, которые могут быть при поездке в страну изучаемого языка; понимать тексты на повседневные и профессиональные темы, в которых используются достаточно употребительные слова и конструкции

Примерная тематика проектной деятельности

1 семестр

1. Национальный флаг Великобритании Union Jack
2. Национальная одежда Шотландцев
3. Символика разных частей Великобритании
4. Особенности английской кухни
5. Британский национальный характер (особенности менталитета)
6. Английский юмор
7. Озёрный край – поэты лейкисты
8. Золотой век Елизаветы I
9. Творчество Уильяма Шекспира. Театр Глобус
10. Поэзия Роберта Бёрнса

2 семестр

11. Театры Лондона
12. Дворцы и резиденции Королевы
13. Британский парламент и роль монарха
14. Английская живопись - Уильям Тёрнер
15. Австралия – столица, экономика, достопримечательности
16. Ливерпуль – родина Битлз (краткая история группы, музей Битлз)
17. Нью-Йорк – большое яблоко

18. Транспорт в Лондоне (метро – the Tube, double-decker buses)
19. Генрих VIII и судьба его жен
20. Мадам Тюссо и ее музей

3 семестр

1. Этапы становления математики как науки.
2. Выдающиеся математики России и страны изучаемого языка.
3. Разделы математики.
4. Информационные технологии современности.
5. Методы работы с информацией.
6. Кибербезопасность.

Задания, необходимые для оценивания сформированности УК-4 на продвинутом уровне

Знать: основные жанры устной и письменной речи, лексические и грамматические особенности, стилистические особенности, терминологический аппарат своей специальности, широкий спектр узкоспециальных выражений и конструкций

1 семестр

Лексико – грамматическое упражнение

Match the word to its definition.

Match the beginnings and the endings of the given sentences.

1) It was necessary for the	a) with new concepts such as sets,
-----------------------------	------------------------------------

early people a to become familiar	axiomatics, structure.
2) In the course of time, counting led	b) mathematical or symbolic logic.
3) Geometry is the study	c) is called Pure Mathematics.
4) Mathematics is a peculiar form of the general process	d) with mathematical ideas, processes and facts.
5) Contemporary mathematics is a mixture of much that is very old and still important (e.g., counting, the Pythagorean theorem)	e) by which unknown quantities, magnitudes and properties may be deduced.
6) The totality of all abstract mathematical sciences	f) of shape, size and position.
7) The totality of all concrete interpretations	g) of human cognition of the real world.
8) Mathematics is the study of relationships among quantities, magnitudes, and properties of logical operations	h) on definitions, axioms, postulates, and rules for combining and transforming positive elements into more complex relations and theorems.
9) The science that draws necessary conclusions encompasses	i) is called Applied Mathematics.
10) The theory of logical deduction and inference is based	j) to arithmetic.

Тестирование

St. Paul's cathedral

1. Everybody coming to London for the first time (want) to see St. Paul's cathedral.
2. This (be) the third cathedral with his name which London (have).
3. The two others (burn) down, the first in 1086 and the second in 1666.
4. Christopher Wren (be) an architect who (build) already many buildings.
5. Then, in 1675, he (start) building his greatest work and (finish) it in 35 years when he (be) an old man.
6. From far away you (can / see) the huge dome with a golden ball and cross on the top.
7. The inside of the cathedral (be) very beautiful.
8. After looking around, you (can / climb) 263 steps to the Whispering Gallery, above the library, which (run) round the dome.
9. It (call) this because if someone (whisper) close to the wall on one side, a person with an ear close to the wall on the other side (can / hear) what (say).
10. Then, if you (climb) another 118 steps, you (be able) to stand outside the dome and (look) over London.
11. Besides, you (can / go) down underneath the cathedral, into the crypt.
12. There (bury) many great men, including Christopher Wren himself, Nelson and others.

Лексико – грамматическое упражнение

Match the word to its definition.

1) Arithmetic	a) deals with the rate of change of a variable and it is a means of finding tangents to curves.
2) Algebra	b) use mathematical concepts to predict events that are likely to happen and organize, analyze, and interpret a collection of data.
3) Geometry	c) is concerned with the deformations in different geometrical shapes under stretching, crumpling, twisting and bedding.
4) Differential calculus	d) deals with numbers and their applications in many ways.
5) Integral calculus	e) is the application of mathematical methods by different fields such as physics, engineering, medicine, biology, finance, business, computer science, and industry.
6) Probability and statistics	f) is devoted primarily to the study of integers and integer-valued functions.
7) Number Theory	g) focuses on the study of polygons, shapes, and geometric objects in both two-dimensions and three-dimensions.
8) Topology	h) studies entirely abstract concepts.
9) Pure mathematics	i) deals with solving generic algebraic expressions and manipulating them to arrive at results.
10) Applied mathematics	j) is concerned with the limiting values of differentials and is a means of determining length, volume, or area.

Тестирование

Put the right verb forms in the gaps.

1. Matt phoned me while we dinner.

- a) had b) were having c) have been having d) was having

2. 'Where are you going on your holiday?' – 'I yet.'

- a) haven't decided b) wasn't decided c) did decide d) hadn't decided

3. I anything since breakfast.

- a) ate b) don't eat c) haven't eaten d) hadn't eaten

4. We couldn't afford to keep our car, so we it.

- a) sold b) didn't sell c) had sold d) hadn't sold

5. The film wasn't very good. I it much.

- a) enjoyed b) didn't enjoy c) wasn't enjoyed d) haven't enjoyed

6. Where have you been? I for you for the last half hour.

- a) looked b) have looked c) have been looking d) had been looking

7. How many faxes this morning?

- a) had she received b) was she received c) has she received d) did she receive

8. How long that camera.

- a) are you having b) have you had c) have you been having d) have you

9. They their holidays in Switzerland last winter.

- a) spend b) spent c) were spending d) had spent

10. Julia for a long time.
a) has lived b) lives c) has been living here d) had lived
11. Have you written down names?
a) everybody b) everybody's c) everybodys' d) everybodies'
12. They decided to go on a hike the rain.
a) despite of b) despite in c) in spite d) in spite of
13. If you don't know the meaning of this word, in the dictionary.
a) chase it up b) search it out c) look it up d) find it out
14. Did you fix these shelves?
a) all on yourself b) all at yourself c) all with yourself d) all by yourself
15. You were rude him for no reason.
a) at b) to c) with d) on
16. When I was a student I to discos every Friday night.
a) used to go b) was used to go c) use to went d) use to going
17. We the project by the end of the month.
a) shall finish b) are finishing c) will have finished d) will be finishing
18. I am here to say that we next week. Everything is ready.
a) will leave b) are leaving c) will be leaving d) will have left
19. This time tomorrow our family on the beach of the Mediterranean sea.

a) will lie b) is lying c) will be lying d) will have lain

20. She didn't know that he her.

a) betray b) would betray c) will betray d) was going to betray

3 семестр

Лексико – грамматическое упражнение

Match the word to its definition.

1) a mixed number	a) the number which is left over in a division in which one quantity does not exactly divide another
2) like fractions	b) the process of combining matrices, vectors, or other quantities under specific rules to obtain their product
3) reduction	c) fractions which have the same denominator
4) equivalent fractions	d) a result obtained by dividing one quantity by another
5) multiplication	e) different fractions that name the same number
6) unlike fractions	f) a number consisting of an integer and a proper fraction
7) a remainder	g) fractions with different numbers in the denominator
8) a quotient	h) the process of converting an amount from one denomination to a smaller one, or of bringing down a fraction to its lowest terms

9) numerator	i) the horizontal line separating the two numbers in each fraction
10) fraction line	j) the top term of a fraction or the term above the fraction line

Тестирование

Complete the sentences with the correct forms of the verbs in brackets.

1. The share price will rise as soon as we (announce) the merger.
2. If we opened an office in Tokyo, I (be) interested in working there.
3. I (apply) for several posts this year but I still (not/manage) to find what I'm looking for.
4. I'm thinking of doing a postgraduate degree – what you (think)? Is it a good idea?
5. If we didn't agree to their terms, what (happen)?
6. What would you do if you (lose) your job?
7. I only (work) there for a couple of months before I went on a business trip.
8. I'm sorry but you (speak) too quickly for me. Could you slow down a little?
9. Don't go into his office – he (introduce) an important report at the moment.
10. I (write) you after I've spoken to my boss.
11. I must hurry. Her plane (land) in 20 minutes.
12. The phone's ringing. – Do not bother, I (answer) it.
13. Many economists believe that interest rates (drop) again.
14. At the moment we (not / know) the profit figures.

15. We (exhibit) our devices at the Inventors' Fair when a Japanese entrepreneur expressed interest in the new product.

Уметь: понимать развернутые доклады и лекции по знакомой теме; написать подробное сообщение на разные темы; анализировать и переводить статьи по специальности и инструкции, касающиеся профессиональной деятельности

Read the text and choose the correct heading from the list of headings below.

List of Headings

- 1) Robots working together
- 2) Looking ahead
- 3) The LGVs' main functions
- 4) Split location for newspaper production
- 5) Getting the newspaper to the printing centre
- 6) Controlling the robots
- 7) Beware of robots!

ROBOTS AT WORK

A

The newspaper production process has come a long way from the old days when the paper was written, edited, typeset and ultimately printed in one building with the journalists working on the upper floors and the printing presses going on the ground floor. These

days the editor, subeditors and journalists who put the paper together are likely to find themselves in a totally different building or maybe even in a different city. This is the situation which now prevails in Sydney. The daily paper is

compiled at the editorial headquarters, known as the prepress centre, in the heart of the city, but printed far away in the suburbs at the printing centre. Here human beings are in the minority as much of the work is done by automated machines controlled by computers.

B

Once the finished newspaper has been created for the next morning's edition, all the pages are transmitted electronically from the prepress centre to the printing centre. The system of transmission is an update on the sophisticated page facsimile system already in use on many other newspapers. An imagesetter at the printing centre delivers the pages as film. Each page takes less than a minute to produce, although for colour pages four versions, once each for black, cyan, magenta and yellow are sent. The pages are then processed into photographic negatives and the film is used to produce aluminium printing plates ready for the presses.

C

A procession of automated vehicles is busy at the new printing centre where the Sydney Morning Herald is printed each day. With lights flashing and warning horns honking, the robots (to give them their correct name, the LGVs or laser guided vehicles) look for all the world like enthusiastic machines from a science fiction movie, as they follow their own random paths around the plant busily getting on with their jobs. Automation of this kind is now standard in all modern newspaper plants. The robots can detect unauthorized personnel and alert security staff immediately if they find an "intruder"; not surprisingly, tall tales are already being told about the machines starting to take on personalities of their own.

D

The robots' principal job, however, is to shift the newsprint (the printing paper) that arrives at the plant in huge reels and emerges at the other end some time later as newspapers. Once the size of the day's paper and the publishing order

are determined at head office, the information is punched into the computer and the LGVs are programmed to go about their work. The LGVs collect the appropriate size paper reels and take them where they have to go. When the press needs another reel its computer alerts the LGV system. The Sydney LGVs move busily around the press room fulfilling their two key functions to collect reels of newsprint either from the reel stripping stations, or from the racked supplies in the newsprint storage area. At the stripping station the tough wrapping that helps to protect a reel of paper from rough handling is removed. Any damaged paper is peeled off and the reel is then weighed.

E

Then one of the four paster robots moves in. Specifically designed for the job, it trims the paper neatly and prepares the reel for the press. If required the reel can be loaded directly onto the press; if not needed immediately, an LGV takes it to the storage area. When the press computer calls for a reel, an LGV takes it to the reel loading area of the presses. It lifts the reel into the loading position and places it in the correct spot with complete accuracy. As each reel is used up, the press drops the heavy cardboard core into a waste bin. When the bin is full, another LGV collects it and deposits the cores into a shredder for recycling.

F

The LGVs move at walking speed. Should anyone step in front of one or get too close, sensors stop the vehicle until the path is clear. The company has chosen a laserguide function system for the vehicles because, as the project development manager says “The beauty of it is that if you want to change the routes, you can work out a new route on your computer and lay it down for them to follow”. When an LGV’s batteries run low, it will take itself off line and go to the nearest battery maintenance point for replacement batteries. And all this is achieved with absolute minimum human input and a much reduced

risk of injury to people working in the printing centres.

G

The question newspaper workers must now ask, however is, “how long will it be before the robots are writing the newspapers as well as running the printing centre, churning out the latest edition every morning?”

Владеть: профессионально-ориентированной межкультурной компетенцией

Задания, необходимые для оценивания сформированности УК-4 на продвинутом уровне

Read the text and match each part with its heading.

List of Headings

- a) Relativity and Quantum Mechanics
- b) Birth of Modern Physics
- c) Advances in Electricity, Magnetism, and Thermodynamics
- d) Development of Mechanics and Thermodynamics
- e) The Scientific Revolution
- f) Greek Contributions

Section A

The earliest history of physics is interrelated with that of the other sciences. A number of contributions were made during the period of Greek civilization, dating from Thales and the early Ionian natural philosophers in the Greek

colonies of Asia Minor (6th and 5th cent. B.C.). Democritus (c.460–370 B.C.) proposed an atomic theory of matter and extended it to other phenomena as well, but the dominant theories of matter held that it was formed of a few basic elements, usually earth, air, fire, and water. In the school founded by Pythagoras of Samos the principal concept was that of number; it was applied to all aspects of the universe, from planetary orbits to the lengths of strings used to sound musical notes.

The most important philosophy of the Greek period was produced by two men at Athens, Plato (427–347 B.C.) and his student Aristotle (384–322 B.C.); Aristotle in particular had a critical influence on the development of science in general and physics in particular. The Greek approach to physics was largely geometrical and reached its peak with Archimedes (287–212 B.C.), who studied a wide range of problems and anticipated the methods of the calculus. Another important scientist of the early Hellenistic period, centered in Alexandria, Egypt, was the astronomer Aristarchus (c.310–220 B.C.), who proposed a heliocentric, or sun-centered, system of the universe. However, just as the earlier atomic theory had not become generally accepted, so too the astronomical system that eventually prevailed was the geocentric system proposed by Hipparchus (190–120 B.C.) and developed in detail by Ptolemy (A.D. 85–A.D. 165).

Section B

The first areas of physics to receive close attention were mechanics and the study of planetary motions. Modern mechanics dates from the work of Galileo and Simon Stevin in the late 16th and early 17th cent. The great breakthrough in astronomy was made by Nicolaus Copernicus, who proposed (1543) the heliocentric model of the [solar system](#) that was later modified by Johannes Kepler (using observations by Tycho Brahe) into the description of planetary motions that is still accepted today. Galileo gave his support to this new system and applied his discoveries in mechanics to its explanation.

The full explanation of both celestial and terrestrial motions was not given until 1687, when Isaac Newton published his *Principia* [Mathematical Principles of Natural Philosophy]. This work, the most important document of the Scientific Revolution of the 16th and 17th cent., contained Newton's famous three laws of motion and showed how the principle of universal [gravitation](#) could be used to explain the behavior not only of falling bodies on the earth but also planets and other celestial bodies in the heavens. To arrive at his results, Newton invented one form of an entirely new branch of mathematics, the [calculus](#) (also invented independently by G. W. Leibniz), which was to become an essential tool in much of the later development in most branches of physics.

Other branches of physics also received attention during this period. William Gilbert, court physician to Queen Elizabeth I, published (1600) an important work on magnetism, describing how the earth itself behaves like a giant magnet. Robert Boyle (1627–91) studied the behavior of gases enclosed in a chamber and formulated the [gas law](#) named for him; he also contributed to physiology and to the founding of modern chemistry.

Newton himself discovered the separation of white light into a [spectrum](#) of colors and published an important work on optics, in which he proposed the theory that light is composed of tiny particles, or corpuscles. This corpuscular theory was related to the mechanistic philosophy presented early in the 17th cent. by René Descartes, according to which the universe functioned like a mechanical system describable in terms of mathematics. A rival theory of light, explaining its behavior in terms of [Waves](#), was presented in 1690 by Christian Huygens, but the belief in the mechanistic philosophy together with the great weight of Newton's reputation was such that the wave theory gained relatively little support until the 19th cent.

Section C

During the 18th cent. the mechanics founded by Newton was developed by several scientists and received brilliant exposition in the *Analytical Mechanics* (1788) of J. L. Lagrange and the *Celestial Mechanics* (1799–1825) of P. S. Laplace. Daniel Bernoulli made important mathematical studies (1738) of the behavior of gases, anticipating the kinetic theory of gases developed more than a century later, and has been referred to as the first mathematical physicist.

The accepted theory of heat in the 18th cent. viewed heat as a kind of fluid, called caloric; although this theory was later shown to be erroneous, a number of scientists adhering to it nevertheless made important discoveries useful in developing the modern theory, including Joseph Black (1728–99) and Henry Cavendish (1731–1810). Opposed to this caloric theory, which had been developed mainly by the chemists, was the less accepted theory dating from Newton's time that heat is due to the motions of the particles of a substance. This mechanical theory gained support in 1798 from the cannon-boring experiments of Count Rumford (Benjamin Thompson), who found a direct relationship between heat and mechanical energy.

In the 19th cent. this connection was established quantitatively by J. R. Mayer and J. P. Joule, who measured the mechanical equivalent of heat in the 1840s. This experimental work and the theoretical work of Sadi Carnot, published in 1824 but not widely known until later, together provided a basis for the formulation of the first two laws of thermodynamics in the 1850s by William Thomson (later Lord Kelvin) and R. J. E. Clausius. The first law is a form of the

law of conservation of energy, stated earlier by J. R. von Mayer and Hermann Helmholtz on the basis of biological considerations; the second law describes the tendency of energy to be converted from more useful to less useful forms.

The atomic theory of matter had been proposed again in the early 19th cent. by the chemist John Dalton and became one of the hypotheses of the [kinetic-molecular theory of gases](#) developed by Clausius and James Clerk Maxwell to explain the laws of thermodynamics. The kinetic theory in turn led to the statistical mechanics of Ludwig Boltzmann and J. W. Gibbs.

Section D

The study of electricity and magnetism also came into its own during the 18th and 19th cents. C. A. Coulomb had discovered the inverse-square laws of electrostatics and magnetostatics in the late 18th cent. and Alessandro Volta had invented the electric battery, so that electric currents could also be studied. In 1820, H. C. Oersted found that a current-carrying conductor gives rise to a magnetic force surrounding it, and in 1831 Michael Faraday (and independently Joseph Henry) discovered the reverse effect, the production of an electric potential or current through magnetism (see [induction](#)); these two discoveries are the basis of the electric motor and the electric generator, respectively.

Faraday invented the concept of the [field](#) of force to explain these phenomena and Maxwell, from c.1856, developed these ideas mathematically in his theory of [electromagnetic radiation](#). He showed that electric and magnetic fields are propagated outward from their source at a speed equal to that of light and that light is one of several kinds of electromagnetic radiation, differing only in frequency and wavelength from the others. Experimental confirmation of Maxwell's theory was provided by Heinrich Hertz, who generated and detected electric waves in 1886 and verified their properties, at the same time foreshadowing their application in radio, television, and other devices. The wave theory of light had been revived in 1801 by Thomas Young and received strong experimental support from the work of A. J. Fresnel and others; the theory was widely accepted by the time of Maxwell's work on the electromagnetic field, and afterward the study of light and that of electricity and magnetism were closely related.

Section E

By the late 19th cent. most of classical physics was complete, and optimistic physicists turned their attention to what they considered minor details in the complete elucidation of their subject. Several problems, however, provided the cracks that eventually led to the shattering of this optimism and the birth of

modern physics. On the experimental side, the discoveries of [X rays](#) by Wilhelm Roentgen (1895), [radioactivity](#) by A. H. Becquerel (1896), the [electron](#) by J. J. Thomson (1897), and new radioactive elements by Marie and Pierre Curie raised questions about the supposedly indestructible [atom](#) and the nature of matter. Ernest Rutherford identified and named two types of radioactivity and in 1911 interpreted experimental evidence as showing that the atom consists of a dense, positively charged [nucleus](#) surrounded by negatively charged electrons. Classical theory, however, predicted that this structure should be unstable. Classical theory had also failed to explain successfully two other experimental results that appeared in the late 19th cent. One of these was the demonstration by A. A. Michelson and E. W. Morley that there did not seem to be a preferred frame of reference, at rest with respect to the hypothetical luminiferous [ether](#), for describing electromagnetic phenomena.

Section F

In 1905, Albert Einstein showed that the result of the Michelson-Morley experiment could be interpreted by assuming the equivalence of all inertial (unaccelerated) frames of reference and the constancy of the speed of light in all frames; Einstein's special theory of relativity eliminated the need for the ether and implied, among other things, that mass and energy are equivalent and that the speed of light is the limiting speed for all bodies having mass. Hermann Minkowski provided (1908) a mathematical formulation of the theory in which space and time were united in a four-dimensional geometry of space-time. Einstein extended his theory to accelerated frames of reference in his general theory (1916), showing the connection between acceleration and gravitation. Newton's mechanics was interpreted as a special case of Einstein's, valid as an approximation for small speeds compared to that of light.

Although relativity resolved the electromagnetic phenomena conflict demonstrated by Michelson and Morley, a second theoretical problem was the explanation of the distribution of electromagnetic radiation emitted by a [blackbody](#); experiment showed that at shorter wavelengths, toward the ultraviolet end of the spectrum, the energy approached zero, but classical theory predicted it should become infinite. This glaring discrepancy, known as the ultraviolet catastrophe, was solved by Max Planck's quantum theory (1900). In 1905, Einstein used the quantum theory to explain the photoelectric effect, and in 1913 Niels Bohr again used it to explain the stability of Rutherford's nuclear atom. In the 1920s the theory was extensively developed by Louis de Broglie, Werner Heisenberg, Wolfgang Pauli, Erwin Schrödinger, P. A. M. Dirac, and others; the new quantum mechanics became an indispensable tool in the investigation and explanation of phenomena at the atomic level.

Промежуточная аттестация

УК-4. Способен осуществлять деловую коммуникацию в устной и письменной формах на государственном языке Российской Федерации и иностранном (ых) языке (ах).

Задания, необходимые для оценивания сформированности УК-4

Примерный список тем для беседы на зачёте и экзамене

1 семестр

1. Иностранный (английский) язык в современном мире.
2. Человек и общество.
3. Семейные ценности в современном мире.
4. География и краткая история Великобритании и США.
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2 семестр

1. Система образования в России, Великобритании и США.
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3 семестр

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1 семестр Тексты социокультурной направленности

Тексты социо-культурной направленности

(1)What is culture?

Without culture, and the relative freedom it implies, society, even when perfect, is but a jungle. This is why any authentic creation is a gift to the future. - Albert Camus

Culture is a learned pattern of behavior, and is a way in which a person lives his life. It is an integral part of every society, and creates a feeling of belonging and togetherness among the people of that society. Culture encompasses various aspects of communication, attitude, etiquette, beliefs, values, customs, norms, food, art, jewelry, clothing styles, etc. Every society has a different culture, which gives it an identity and uniqueness.

In spite of the vast cultural diversity, there are certain elements of culture that are universal. They are known as cultural universals, which comprise certain behavioral traits and patterns that are shared by all cultures around the world. For instance, classifying relations, having some form of art and music, use of jewelry, classifying people according to gender and age, etc., are common in all cultures of the world.

Culture is cumulative and dynamic. The culture of any particular group is constantly evolving and undergoing slow changes. Each generation brings along a new set of changes

and developments in the culture of that society. Moreover, long-term exposure to different cultures leads to the exchange of certain cultural aspects.

Culture is learned from the people surrounding us, our parents, guardians, relatives, etc. The distinct set of beliefs, values, traditions and behavior is passed down through generations. It is a collective phenomenon, and cannot exist in isolation in a single individual. It is shared at various levels, namely national, regional, gender, generation, corporate, social class, etc., but is also rich in diversity. Residents of a nation share certain aspects, whereas different regions within the nation have their own unique blend of beliefs, values and styles, and so on.

Culture implies the overall way of life for a group of individuals. It is the glue that binds people together, and enables them to adapt, survive, and live together in harmony.

The knowledge necessary for survival, and adaptation to our natural and social environment, is acquired through culture. Culture is what imbibes into us the knowledge of good and bad, acceptable and non-acceptable, socializing, etc. Knowingly or unknowingly, it plays a major role in shaping our personality and behavior. Each individual has a distinct and unique personality. However, within a group, there exist certain regularities in behavior. This can be attributed to the culture in which they grow up. In addition, culture also influences our perception of reality and worldly concepts. Our interpretations of the actions and events around us are molded by our culture. It forms the basic foundation of our life and behavior.

(2) Red-brick universities

In the 19th Century, Britain was undergoing enormous changes as a result of the Industrial Revolution. In the large industrial cities, there was an urgent need for a workforce with technical and scientific skills to meet the demands of the new economy.

This led to the creation of specialised schools and private education institutes, often dedicated to fields such as medicine or engineering. For example, the Manchester Mechanics Institute was established in 1824, and Birmingham Medical School in 1825.

These institutions were incredibly successful, and became centres of knowledge and research during the Victorian era. Eventually, some were granted independent university status; for instance, Birmingham Medical School became the University of Birmingham.

Many of these new civic universities featured buildings built in the Gothic style with red bricks – a popular trend in the Victorian times. This led to institutions of this type being nick-named ‘red brick’ universities.

Red brick institutions were actually mocked at first by Britain’s existing universities. The university establishment, particularly ‘ancient’ universities such as Oxford and Glasgow, saw them as inferior. This led to the term ‘red brick’ being used in a derogatory way (in other words, as an insult).

However, this quickly changed. Today, England’s red brick universities are among the most highly ranked in the world. Out of the 6 original red brick universities (University of Birmingham, University of Bristol, University of Leeds, University of Liverpool, University of Manchester, University of Sheffield), 5 are in the global top 100 (QS World University Rankings 2020). Nearly all of the red brick universities are members of the prestigious Russell Group (which includes Cambridge, Oxford, Glasgow and Imperial), and many employers request graduates with a red brick degree.

(3) What is British Humour?

In popular culture, British humour is a somewhat general term applied to certain types of comedy and comedic acts from the United Kingdom. Many UK comedy TV shows typical of British humour have become popular all round the world, and, for good or bad, have been a strong avenue for the export and representation of British culture to an international audience, but like many things the "typical" British sense of humour doesn't really exist.

There are many different kinds of humour, and often culture and tradition plays a big part in how funny you may find something, or not. There are numerous British comedy films, in the past we produced the notable Ealing comedies like *The Lavender Hill Mob* and *The Man in the White Suit*, the 1950s work of the Boulting Brothers; *Private's Progress*, *Lucky Jim*, and *I'm All Right Jack*, innumerable popular comedy series including the *St Trinian's* films, the "Doctor" series, and the long-running *Carry On* films. Some of the best known British film comedy stars were Will Hay, George Formby, Norman Wisdom, Peter Sellers and the Monty Python team. Other actors associated with British comedy films included Ian Carmichael, Terry-Thomas, Margaret Rutherford, Irene Handl and Leslie Phillips.

More recent successful films include the working class comedies, *Brassed Off*, *The Full Monty*, the more middle class Richard Curtis-scripted films *Four Weddings and a Funeral*, and *Notting Hill* and youth-oriented, pop-culture films like *Shaun of the Dead* and *Hot Fuzz*.

(4) Niagara Falls

Niagara Falls is one of the world's leading tourist attractions. Millions of people around the world visit here each year. Summers at the Falls are especially busy, with traffic jams and parking problems. However, the Falls are beautiful in winter too.

Many have asked why people travel so far to see water falling over a cliff. The size and beauty of Niagara Falls help to make it special. While many falls are higher than Niagara, very few are as wide or have such a volume of water. It also helps that Niagara is relatively easy to travel to.

When the first Europeans came to Niagara, the Falls were surrounded by forest. The noise of the Falls could be heard miles away, before they were actually seen. The first visitors were filled with horror at the sight.

Later, fear ceased to be the main emotion inspired by the Falls. Later, visitors were impressed by the beauty and grandeur of the Falls, which overwhelmed them with wonder.

By the 1830s, people were able to come to the Falls by railway. As more and more people came, the tourist industry developed. Early tourism was not well regulated, and there were many complaints about cheats and swindles. Today, there are similar complaints about tourist junk and high prices.

The majority of tourists stay on the Canadian side. There are two falls, separated by an island. Since the Niagara River forms the boundary here between Canada and the United States, each country has one of the falls. The Canadian Horseshoe Falls is wider and more impressive than the American Rainbow Falls. About nine times more water goes over the Canadian Falls. Nonetheless, there is much to be seen on the American side. The island in the

middle, Goat Island, is one of the best places to view the falls and rapids. It is on the American side.

Newly married couples began coming to Niagara Falls when it was still a secluded, peaceful and romantic spot. It is still popular with newly-weds as a relatively inexpensive and convenient place to spend their honeymoon.

Besides being beautiful, Niagara Falls is also very useful. Their falling water is the power behind several of the largest hydroelectric stations in the world. Much of the electric power used in this part of North America comes from Niagara Falls. In order to harness this power, half of the flow of water is channeled away from the falls during the night, and during the non-tourist season. Probably most visitors don't notice the difference. Niagara has attracted many kinds of people over the years. Businessmen have come to profit from the tourists.

Daredevils have come to make a name for themselves. Some have gone over the falls in a barrel, while others have walked above the falls on a tightrope. Poets and artists have visited here to capture its beauty. Lovers have come to gaze on its romantic scenery. All of these, and many others, have helped to make Niagara Falls world famous.

(5) Ireland

Ireland is an island in the Atlantic Ocean just west of Britain. For much of its history, it has been an advantage to Ireland to be far from the mainland. The Romans or the other early Empires never conquered Ireland. It was the remoteness of Ireland that helped preserve much of Christian and classical culture. After the fall of the Roman Empire, wandering tribes destroyed much of what remained on the continent.

Finally, it was Ireland's turn to be invaded. First, the Norsemen or Vikings attacked during the 800s and 900s. Then in the 1100s, the English invaded Ireland. Since that time, there has always been an English presence in Ireland. The conflict between the English and the Irish grew worse in the 1500s. Then the English became Protestant, and the Irish remained Catholic. In the 1600s, Oliver Cromwell tried to make Ireland Protestant by driving

out the Catholics and bringing in Protestant settlers. In the centuries following, Irish Catholics had very few rights in their own country. The Catholic Irish were not allowed to vote until 1829.

Since Irish Catholics were not allowed to own land, they were poor tenant farmers. They paid rent to the English landlords. The main food crop in the 1840s was potatoes. When these became infected by blight, thousands of Irishmen starved. Many others were evicted from their dwellings because they couldn't pay the rent. Hundreds of thousands of Irish took ship for North America. The Catholic Irish preferred to go to the United States because Canada was under British influence. However, many Protestant Irish went to Canada.

The influence of the Irish on North American culture has been very great in many areas. Prominent Irish-Americans include Presidents John F. Kennedy and Ronald Reagan. Meanwhile, in Ireland itself, a strong independence movement developed. A rebellion against England in 1916 began a struggle that resulted in independence for most of Ireland. Some Protestant areas in Northern Ireland preferred to stay with England. Republican groups such as the Irish Republican Army wanted to "liberate" the north from British rule.

Nowadays, conflict between Protestants and Catholics is limited to these northern counties. Constant attempts are being made to bring the conflict there to an end. Meanwhile, the Irish Republic, or Eire, has become prosperous again. It can sell its agricultural products to the European Common Market. Irish beer and whisky are sold all over the world. Ireland is also becoming known for its high-tech industries. Because of this relative prosperity, the population is increasing again, after a century and a half of decline.

The Irish differ from other people because the vast majority of Irishmen live away from their homeland. However, this exodus from Ireland has helped to spread Irish music, culture and products around the world. On St. Patrick's Day (March 17th), nearly everyone becomes Irish for the day. Then there is a great party with Celtic music, Irish dancing, green beer and the wearing of the green.

(6) Formal and informal education

Education includes different kinds of learning experiences. Education is the ways in which people learn skills, gain knowledge and understanding about the world and about themselves. There are two types of education – formal and informal.

Informal education involves people in learning during their daily life. For example, children learn their language simply by hearing and by trying to speak themselves. In the same informal manner they learn to dress themselves, to eat with good manners, to ride a bike or to make a telephone call. Education is also informal when people get information or learn skills on their own initiative without a teacher. To do so they may visit a book shop, library or museum. They may watch a television show, look at a video tape, or listen to a radio programme. They do not have to pass tests or exams.

Formal education is the instruction given at different kinds of schools, colleges, universities. In most countries people enter a system of formal education during their early childhood. In this type of education, the people, who are in charge, decide what to teach. Then learners study those things with the teacher at the head. Teachers expect learners to come to school regularly and on time, to work at about the same speed as their classmates, and to pass tests and exams. Learners have to pass exams to show how well they have progressed in their learning. At the end of their learning learners may earn a diploma, a certificate, or a degree as a mark of their success over the years.

The school systems of all modern nations provide both general and vocational education. Most countries also prefer special educational programs for gifted or for physically or mentally handicapped children. Adult education programmes are provided for people who wish to take up their education after leaving school. Most countries spend a large amount of time and money for formal education of their citizens.

(7) Online shopping

Online shopping allows consumers to shop in the convenience of their own home, and to save travelling time to retail stores and spend their time on other important tasks and hobbies. Researchers indicate convenience as the ‘primary objective’ of online shopping. This is relevant to 72% of online shoppers’ claim that they would rather surf online than go to retail stores to get information about a product. According to a study, 72% of online shoppers chose convenience over privacy. In addition to the ease of finding

products online and time saved, consumers can shop without time limitations with 24 hour access as a beneficial characteristic of online shopping.

Online shopping benefits both the society as a whole and individuals. The society can save human resources when consumers help themselves by browsing freely online instead of asking for assistance from vendors. Consumers are also freed from the pressure to buy from the vendors and can spend more time to make wise purchase decisions.

Consumers desire a variety of products because they look for the right product that will fully satisfy them. There is an infinite variety of products available online and the internet allows consumers to browse through products that are made all around the world without geographical boundaries.

With the online tools that enable product comparison, consumers can compare product prices and features to make a better decision with less effort.

One of the numerous disadvantages of online shopping is that many shoppers enjoy shopping with others and it is often a good way to make social connections. When shopping independently online, that enjoyment is lost.

Privacy is the number one reason that non-online shoppers do not shop online. Almost 95% of Web users have declined to provide personal information to Web sites at one time or another when asked.

Because one needs money to buy a computer and to have internet connection, online shopping seems to be limited to people with a reasonable amount of income. Also since it is harder to learn to use computers at an older age, elderly people tend to shop at traditional retail stores. Another reason some people do not shop on line is that they are worried that the products will not be what they have expected by viewing online.

(8) Wonders of the World

Humans are generally good at noticing beautiful things. Humans are also generally good at building beautiful things. A Wonder of the World is a landmark or a natural phenomenon that is significant enough to be noticed by any person around the world. Many

different lists of the Wonders of the World were made over the course of history, so let's have a look at some!

The first of such lists was made by a Greek historian Herodotus. Only three places were mentioned in it. Eventually the list was expanded up to seven Wonders. Probably everyone can name at least some of those monuments: the Great Pyramid of Giza; the Hanging Gardens of Babylon; the Lighthouse of Alexandria; the Colossus of Rhodes; the Mausoleum at Halicarnassus; the Temple of Artemis; the Statue of Zeus at Olympia. The curious thing about these Wonders is that almost all of them represent the Greek culture. Another thing to note is that the ancient Greeks haven't actually used the term 'wonder', but instead it was a list 'of things to see', making such lists essentially just a travel guide. Almost all of these Wonders were destroyed one way or another, and today only the Great Pyramid of Giza, also known as the Pyramid of Cheops or the Pyramid of Khufu, still stands.

This wasn't the only list of supposed Wonders though. Later on, many attempts were made (with a little to no consensus) to either make a new list or add more Wonders to the existing one. The most remarkable candidates were Colosseum of Rome, Hagia Sophia of Istanbul, Taj Mahal and the Great Wall of China.

Another peculiar attempt was made in 1994. The American Society of Civil Engineers made a list of Seven Wonders of Modern World, focusing mainly on an engineering scope of selected projects. Among other projects, this list features Panama Canal, Channel Tunnel and CN Tower of Toronto, which was the tallest structure in the world up to 2007.

There is also a list of Natural Wonders of the World. It included the Great Barrier Reef, Mount Everest, the Grand Canyon of Arizona and, curiously enough, aurorae, making it the first list of its kind to include a phenomenon instead of a place.

But what about the world beyond Earth? Surely, it must have its wonders too! And indeed, in 1999, an attempt was made to list Seven Wonders of the Solar System. Amongst those were the rings of Saturn, the asteroid belt and the Great Red Spot of Jupiter.

Ultimately, the world is too big of a place to make an exhaustive list of all landmarks worth visiting. But those that didn't make into any prominent list are still protected and treasured by their neighbours. The organization that manages the lists of such landmarks and attends to any legal matters regarding them is called UNESCO.

(9) The Tower of London

In the year 1066, after his victory at the Battle of Hastings, William the Conqueror was seeking to strengthen his control over the subdued English territories. In the following 20 years in England nearly 40 castles were founded by him and his vassals. It was probably the largest castle-building operation in the whole history of medieval Europe.

One of the castles was to be founded inside London, already the largest English town in those times. The so-called Tower of London was built on remains of an ancient Roman fortification, and initially was built mainly from timber. Only a hundred years later it was reinforced with stone. The castle takes its name from the White Tower, which is the name of the main keep that still stands as of today. People from other towns referred to it as The Tower of London, and eventually it became a name widespread enough to stick.

Given its location and strategic importance, the castle soon became a residence for the richest and the most influential people across England. Over the years the castle has expanded greatly, because each of its owners was always seeking to add something distinct to its fortifications. One of the darker stories of that age is the tale of the Princes in the Tower, two young boys of royal blood who were declared illegitimate and then murdered by some unknown assailant. Remains of two boys were found inside the castle in a wooden box in 1674.

Starting in the 16th century, the castle started to see its use as a royal residence. It gained much notoriety in following years though, as it was also used as a prison and a place of execution for people who'd fall out of favour with their rulers.

In modern times The Tower of London became less ominous. At some point there was even a zoo inside. It started as a collection of royal pets that quickly outgrew its accommodation and was soon moved to the London Zoo located inside Regent's Park. It's still open nowadays and is a popular tourist landmark.

Since 1988 The Tower of London has been listed as a UNESCO World Heritage Site. In the 21st century it's mainly a tourist attraction. Usually you can visit the castle from Wednesday to Sunday, from 10 AM to 6 PM. The entrance fee for an adult is 25£. Visitors have free Wi-Fi access and can also buy some signature snacks in one of the cafes or kiosks inside.

(10) Global consequences of the climate change

The 20th century was very notable with its unparalleled¹ technological advancement of humanity. With each passing day the lasting impact that we leave on our planet becomes more and more apparent. The most obvious and harmful outcomes of heavy industrialization are global warming and climate change.

The first signs of global warming became obvious in the middle of the last century. Since the 1970s, the surface temperature of Earth has risen by 1 °C. Multiple data records show now that the warming happens at the rate of roughly 0.2 °C per one decade.

This is a very alarming development. The bulk of global warming is attributed to human activity. Assuming we don't do something about it, the consequences would be lasting, probably irreversible, and very harsh.

The first and most obvious effect is the heating of Earth's atmosphere. This means that there will be less cold days and more hot days overall. This in turn means that both plants and animals will need to adjust to it. Some of them might not survive such a change.

The secondary effect is the melting of continental ice, which makes sea levels rise far above their normal point. Extreme cases could lead to floods and destruction of continental coastlines.

Warmer weather also results in more water evaporating and the air becoming more humid. This can lead to even more rains, floods and some extreme weather patterns such as wildfires and tropical cyclones.

One of the most insidious and less obvious effects is the change of the oceans oxygen levels. Warmer water can hold less oxygen than the colder one, and so if the temperatures continue to rise, many underwater species risk total extinction.

While humanity definitely contributes much to climate change with irresponsible burning of fossil fuels, we still can battle it. Switching to renewable and clear energy sources, electrical cars, and improving the efficiency of our factories can curb the adverse effects we've inflicted on our planet over the last 100 years.

And if worse comes to worst, humanity can be very good at adapting to hostile environment. Adaptation strategies include reinforcing the coastlines or relocating deeper into the mainland; development of weather-resistant crops; development of contingency scenarios for local disaster management.

(11) Music in Great Britain

The British have not been regarded as a particularly musical people and, from the end of the 17th century until the 20th century, there were relatively few British composers of international renown.

Before the 16th century, musical life was centred on the church, especially the cathedrals and the royal chapels. The choral works of John Taverner, William Byrd and Thomas Tallis are still performed today, most notably by the choirs of King's College, Cambridge and Christ Church in Oxford. Secular music in the 16th century included the instrumental work of William Byrd and Orlando Gibbons and the madrigals of Gibbons and Thomas Morley.

Henry Purcell, famous for his opera *Dido and Aeneas* (1689), has been described as the last great English composer before the 20th century. John Gay's *The Beggar's Opera* (1728), is still occasionally performed, and the comic operas of Gilbert and Sullivan are among the few 19th century British works that are still part of the repertoire.

The 20th century saw a renaissance in British music with the work of composers such as Delius, Hoist, Elgar, Vaughan Williams, Walton, Tippett, Maxwell Davies and Britten. Britten in particular came to be regarded as a specially "English" composer, partly through the English themes of several of his operas but also through the folk songs and church music that provided the inspiration for many of his other works.

There is now a flourishing musical life in Britain with more people going to concerts than ever before. The BBC plays an important part in the development of music both by commissioning new work and by supporting orchestras. The BBC Radio 3 programme, which is broadcast throughout the day and evening, is devoted mainly to music. Many British orchestras and musical groups have an international reputation. They include the London Philharmonic Orchestra (LPO), the London Symphony Orchestra (LSO), the BBC Symphony Orchestra, the Philharmonia, the Royal Liverpool Philharmonic, and others. Famous choirs include the Bach Choir and the Royal Choral Society. Music festivals held annually include those at Bath and Aldeburgh, and the Three Choirs Festival, held at Gloucester, Hereford and

Worcester in turn. The popular series of Promenade Concerts held every summer in the Royal Albert Hall, London, are broadcast by the BBC.

At a more modest level, almost all schools and colleges have an orchestra, and many towns have a choral society. Music in the home is more likely to be listened to than played, but many homes have a piano.

(12) National Dress in Britain

Scottish National Dress

One of the most famous national costumes in the world is that worn in Scotland, the kilt, however some people say that the kilt is not as traditional as some would have it. Be that as it may it is certainly what people associate with Scotland, along with whisky and haggis that is. Some people consider it very bad luck to wear a kilt in a tartan that does not belong to your family.

Today traditional dress for men in Scotland is a kilt with shirt, waistcoat and tweed jacket, stockings with garter flashes, brogue shoes and a sporran. A bonnet is often worn displaying the clan crest. Traditionally ladies don't wear kilts, they do however wear dresses or pleated skirts in a tartan material. More often though they wear a light plaid or shawl of tartan material.

Welsh National Dress

Welsh National dress is relatively young and not as famous as Scottish National dress. Still they do have a National costume, but it's the way the ladies dress that is most well-known, in fact there isn't really a National costume for men although recently through the rise of nationalism in Wales a tartan has been created and tartan trousers or kilts are often worn.

For the ladies the typical Welsh costume consists of a hat, made of black felt, with a high crown and wide brim, which is worn over a lace cap. A red flannel shawl is worn over a crisp white blouse, and a full skirt made of wool with a black and white check pattern and a starched, white apron. Proper Welsh ladies always wore black woolen stockings and black shoes and carried a basket, made from willow withies.

(13) Two Great Artists: Leonardo and Michelangelo»

Many people admire the paintings and sculptures that artists create. Some very beautiful paintings and sculptures were created by two men who lived in the same country at the same time. These men were Leonardo da Vinci and Michelangelo. They both lived in Italy around the year 1500.

Leonardo da Vinci is most famous for his painting called the Mona Lisa. This is perhaps the best-known painting in the world. The Mona Lisa shows the head and shoulders of a dark-haired woman. When people look at this painting, they are often captivated by her smile and by her eyes, which have a look of mystery.

Another painting of Leonardo's is called The Last Supper. This painting shows a famous scene from the Christian religion. In this painting, Jesus Christ is seated at the middle of a long table, with his followers (the disciples) seated around him. Many of the paintings that were created at this time have a religious theme.

Leonardo was not only an artist; he was also interested in engineering. He actually worked for some time as an advisor to a military leader, helping him to develop new machines for use in war. Leonardo also made rough drawings of machines that are similar to those that were invented much later, such as submarines and helicopters. Obviously, Leonardo was an extremely creative man.

Michelangelo was about 23 years younger than Leonardo. In addition to being a painter, Michelangelo was also a sculptor, and many experts consider him the greatest sculptor of all time. One of his most famous sculptures is David, which is a statue of a young man who was a famous figure in the Bible. Another great sculpture of Michelangelo's is called the Pieta. The Pieta shows Mary, the mother of Jesus, holding the body of her son across her lap.

Michelangelo is also famous for painting the ceiling of a church known as the Sistine Chapel. The leader of the Roman Catholic Church, Pope Julius, asked Michelangelo to paint the ceiling of this new church. This project required many years of hard work, and the Pope complained that it took too long. However, when the work was finished, the ceiling of the Sistine Chapel was covered with beautiful paintings of many scenes from the Bible.

Fortunately, many of the works of Leonardo and of Michelangelo can still be seen today in the art galleries of Europe. During the past 500 years, the color of the paintings had faded somewhat, but in recent years, some work has been done to restore the paintings to their original appearance.

(14) The Vikings

About a thousand years ago, people known as the Vikings were known and feared throughout Europe. The Vikings were the people of the northern part of Europe, called Scandinavia, which includes the modern countries of Denmark, Norway, and Sweden. The Vikings made their living by farming and fishing. However, by about the year 700, they began making attacks, or raids, upon towns along the coasts of Europe in order to steal the wealth of those towns.

The Vikings made their attacks very quickly and without any warning. They were very cruel to the people of the towns they attacked, and they sometimes destroyed the towns by burning down the buildings. In some parts of Europe, the local kings would often fight against the Vikings. Sometimes, however, the kings would pay the Vikings in order to persuade them not to attack.

Although the Vikings were known as fierce warriors, they also built excellent ships. The wooden Viking ships, called longboats, were able to sail even in very bad weather. Many Viking longboats were about 20 metres long, but some were nearly 90 metres long. The Viking sailors used both sails and oars to move their ships.

The Vikings travelled across a large area. They made many of their attacks in Britain, France, and Germany, but sometimes sailed south, into the Mediterranean Sea. Other Vikings moved to the east, and then south along the rivers of Russia. Some even went as far as the area that is now the country of Turkey. In some places, the Vikings decided to stay. Many Vikings settled in England and in France, and eventually they mixed with the local people. Other Vikings settled in Russia and also mixed with the people there. The most famous travels of the Vikings were in the Atlantic Ocean. Vikings sailed westward to the island of Iceland where many of them stayed.

Today, the people of Iceland are descended from the Vikings. Some Vikings sailed farther west to the cold island of Greenland. Vikings lived in Greenland for several generations, but eventually they died out. Some Vikings had gone even further west and reached the Canadian island of Newfoundland. The Vikings only stayed for a few years, but they had reached North America about 500 years before Christopher Columbus!

Gradually, the Vikings became converted to the Christian religion. They also stopped raiding the towns of Europe, and instead of fighting, they began trading with their neighbors. Today, the Scandinavian countries are known as very peace-loving nations.

(15) The History of the English Language

Most people know that the English language is spoken by many millions of people around the world. However, few people are aware of the history of the English language. Today, English is one language, but in some ways it is a mixture of many different languages.

The English language is most closely related to a group of languages called the Germanic languages. This group also includes languages such as German and Dutch. About 1500 years ago, these languages were not yet distinct from each other. Some of the people of Germany and the Netherlands then moved to England.

Those people were called the Anglo-Saxons, and their language then evolved into English. Most of the basic words of the English language are derived from these very old Anglo-Saxon languages. For example, the words for the parts of the body, for numbers, and for animals are mostly Anglo-Saxon words.

Some new words were brought to England over 1000 years ago by people who came from the Scandinavian countries of northern Europe. Many words that begin with the letters “sk”, such as skin and skill, are Scandinavian words.

A major change happened in the English language after the year 1066. In that year, England was conquered by a king from the northern part of France. He and his followers spoke French, so French became an important language in England. During the next few hundred years, the English language absorbed a very large number of French words. In fact, today’s English dictionaries contain more words of French origin than of Anglo-Saxon origin. Part of the reason why the English language has so many words is that it often has two words for each idea—one word of Anglo-Saxon origin, and one word of French origin.

Many more words entered the English language a few hundred years ago, when science and technology became more widespread. Most scientific and technical words are derived from words of the ancient languages of Latin and Greek. Because there are so many of these scientific and technical words in the English language today, the influence of Latin and Greek has been quite large.

Other languages have also contributed many words to the English language. Some words have come from the Celtic languages, spoken in Ireland, Scotland, and Wales. Many words have been added to the English language by immigrants who came to North America from various countries of Europe. Also, many more words have been adopted from the Native languages of North America, Australia, and the Pacific, and from the languages of

peoples in Africa and Asia. All of these words have made English a very interesting language!

(16) History of Buckingham Palace

George III bought Buckingham House in 1761 for his wife Queen Charlotte to use as a comfortable family home close to St James's Palace, where many court functions were held. Buckingham House became known as the Queen's House, and 14 of George III's 15 children were born there.

George IV, on his accession in 1820, decided to reconstruct the house into a *pied-à-terre*, using it for the same purpose as his father George III.

As work progressed, and as late as the end of 1826, The King had a change of heart. With the assistance of his architect, John Nash, he set about transforming the house into a palace. Parliament agreed to a budget of £150,000, but the King pressed for £450,000 as a more realistic figure. Nash retained the main block but doubled its size by adding a new suite of rooms on the garden side facing west. Faced with mellow Bath stone, the external style reflected the French neo-classical influence favoured by George IV.

The remodelled rooms are the State and semi-State Rooms, which remain virtually unchanged since Nash's time.

The north and south wings of Buckingham House were demolished and rebuilt on a larger scale with a triumphal arch - the Marble Arch - as the centrepiece of an enlarged courtyard, to commemorate the British victories at Trafalgar and Waterloo.

By 1829 the costs had escalated to nearly half a million pounds. Nash's extravagance cost him his job, and on the death of George IV in 1830, his younger brother William IV took on Edward Blore to finish the work. The King never moved into the Palace. Indeed, when the Houses of Parliament were destroyed by fire in 1834, the King offered the Palace as a new home for Parliament, but the offer was declined.

Queen Victoria was the first sovereign to take up residence in July 1837 and in June 1838 she was the first British sovereign to leave from Buckingham Palace for a Coronation. Her marriage to Prince Albert in 1840 soon showed up the Palace's shortcomings.

(17) What do we know about the British

Almost every nation has a reputation of some kind. The French are supposed to be amorous; the Germans dull, formal, efficient; the Americans boastful, energetic, gregarious and vulgar. The British have been known as superior, snobbish, aloof, hypocritical and unsociable. Though these characteristics have been noted by people from all over the world, the traditional opinion about British was based on the habits of those Britons, who could afford to travel: diplomats, merchants and those who were taught by public school their “stiff-upper-lip” philosophy. But the stereotype of the reserved Englishman is in many ways out of date.

An unusual geographical position of the country has produced a certain insular spirit among its inhabitants who tend, a little more than other people, to regard their own community as the centre of the world. The British look on foreigners in general with a slight contempt and think that nothing is as well done elsewhere as in their own country. That is why they are considered not a very hospitable nation.

Like any other nation or society; the British like to create an agreeable picture of themselves. They think that their important national values are tolerance, decency, moderation and consensus. The British pride themselves on fair play and a genius for compromise. As seen by outsiders, qualities of the typical British also include reserve and modesty, politeness and helpfulness and a gift for understatement.

But there is one quality of the British national character which remains indisputable. The British people are known to be profoundly conservative. They always prefer their glorious past with its reassurance to the uncertainty of the future. Their conservatism on a national scale may be illustrated by reference to the public attitude to the monarchy, an institution which is held in affection and reverence by nearly all British people, to the old traditions and ceremonies which are so carefully cherished.

The British are community-minded people. They have had a long tradition of democracy, not so much in the sense of creating formal institutions, but in the active sense of popular cooperation to uphold the will of the people. The British willingly participate in public affairs. There are plenty of charities officially registered with the government, and lots of voluntary organisations, including sports clubs, trade-unions, rambling clubs, protest groups and societies.

British people distrust generalizations. The British emphasize individuality because they hate the idea of appearing the same. Every regiment in the army, every school or university, many municipal corporations, clubs and other institutions tend to have their own uniform, traditions or their signs identifying them and making them different from others. The English seem to like defining themselves as members of small groups which they have,

as individuals, helped to create. They tolerate eccentrics, difficult people and nonconformists in social behavior.

Privacy is important for them as well. “The Englishman’s home is his castle” is the saying known all over the world. The British people more strongly than other nations are attached to their country and to their homes. For them there is no place like home, there they feel most comfortable and their privacy is guaranteed.

(18) English Language Day

English Language Day is celebrated on 23 April. Read about where English came from, how it came to be spoken all over the world and how it is changing.

English Language Day was first celebrated in 2010, alongside Arabic Language Day, Chinese Language Day, French Language Day, Russian Language Day and Spanish Language Day. These are the six official languages of the United Nations, and each has a special day, designed to raise awareness of the history, culture and achievements of these languages.

This day was chosen because it is thought to be Shakespeare's birthday, and the anniversary of his death. As well as being the English language's most famous playwright, Shakespeare also had a huge impact on modern-day English. At the time he was writing, in the 16th and 17th centuries, the English language was going through a lot of changes and Shakespeare's creativity with language meant he contributed hundreds of new words and phrases that are still used today. For example, the words 'gossip', 'fashionable' and 'lonely' were all first used by Shakespeare. He also invented phrases like 'break the ice', 'all our yesterdays', 'faint-hearted' and 'love is blind'. Can you guess what they mean?

The story of the English language began in the fifth century when Germanic tribes invaded Celtic-speaking Britain and brought their languages with them. Later, Scandinavian Vikings invaded and settled with their languages too. In 1066 William I, from modern-day France, became king, and Norman-French became the language of the courts and official activity. People couldn't understand each other at first, because the lower classes continued to use English while the upper classes spoke French, but gradually French began to influence English. An estimated 45 per cent of all English words have a French origin. By

Shakespeare's time, Modern English had developed, printing had been invented and people had to start to agree on 'correct' spelling and vocabulary.

The spread of English all over the world has an ugly history but a rich and vibrant present. During the European colonial period, several European countries, including England, competed to expand their empires. They stole land, labour and resources from people across Africa, Asia, the Americas and Oceania. By the time former British colonies began to gain independence in the mid-20th century, English had become established in their institutions. Many brilliant writers from diverse places across Africa, the Caribbean and Asia had started writing in English, telling their stories of oppression. People from all over the world were using English to talk and write about justice, equality, freedom and identity from their own perspectives. The different varieties of English created through this history of migration and colonisation are known as World Englishes.

(19) Oxford University

Oxford is a beautiful town on the River Thames about fifty miles from London. Some people say it is more beautiful than any other city in England. Oxford University was founded in the 12th century as an aristocratic university and has remained so to the present day.

The University consists of 32 colleges – 27 colleges for men and 5 colleges for women. There are 16 faculties there. Each college is a completely autonomous body, governed by its own laws. A large college has about 500 students, a small one – about a hundred. Several colleges say they are the oldest, but no other college is as old as Merton, which began in 1264.

The term of studies lasts for 10 weeks. There are 3 terms in the Oxford academic year. Within the first week the freshman meets his tutor who tells the student about his plans, the lectures which he must take, about the requirements for the examination which he will take, about the course of reading for him. Attendance at lectures is not compulsory. Once every week each undergraduate goes to his tutor's room to read out an essay which he has written and discuss this essay with the tutor. At the beginning or end of each term the progress of the students is tested by the college examinations. They pay great attention to athletics at the University. The students are engaged in different kinds of sports, take part in competitions between Oxford and Cambridge Universities. This is how a student spends his day. His working hours are from 9 to 1. At 9 o'clock he sees his tutor or goes to the library, or attends lectures. From 2 to 5 he is engaged in sports and all kinds of exercise. From 5 to 7 he works

in the library or laboratory. At 7 o'clock they have dinner-time. After dinner the students have club activities, debating societies, etc. By 10 o'clock the students must be in the college, as most of students live in the colleges, only some of them live in lodgings in the town. The doors of Oxford University are not open to all. The majority of the students are graduates of private schools, so Oxford University remains an aristocratic university to the present day.

(20) University education in Great Britain

There are more than 60 universities in Britain. But not all universities are equal. They differ from one another in history, tradition, academic organization. Not all British universities have a well-known reputation. Oxford and Cambridge, the oldest universities, are world-known for their academic excellence. The University of London has the size and breadth to rank among the UK's top universities. A university usually consists of colleges. The departments of the colleges are organized into faculties.

University teaching in the UK differs greatly at both undergraduate and postgraduate levels from that in many other countries. An undergraduate programme consists of a series of lectures, seminars, tutorials and laboratory classes which in total account for about 15 hours per week.

Following a particular programme students take series of lecture courses which may last one academic term or the whole year. Associated with each lecture course are seminars, tutorials, laboratory classes which illustrate the topics presented in the lectures.

Lectures are given to large groups of students (from 20 to 200). Seminars and tutorials are much smaller than lecture classes and in some departments can be on a one-to-one basis (one member of staff and one student).

Students prepare work in advance for seminars and tutorials. And this can take the form of a topic for discussion by writing essays or by solving problems.

Lectures, seminars and tutorials are all one hour in length, laboratory classes last two or three hours. Each student has a tutor whom he can consult on any matter whether academic or personal.

The academic year is split into three terms. Formal teaching takes place in the first two terms which last for twenty four weeks in total. The third term is reserved for classes and examinations and lasts for six weeks.

Universities teach in all major subject areas: arts, science, law, engineering, medicine, social sciences.

University staff are chosen for the best knowledge in their subject. The teaching encourages students to learn in the most effective way. University degree courses extend from three to four years. After three years of study at the University graduates will leave with the Degree of Bachelor of Arts or Science. They can continue to take their Master`s Degree and then the Doctor`s Degree.

(21) St Patrick – Bishop of the Irish

St Patrick is the Patron Saint of Ireland and is credited with having established Christianity in the country more than 1500 years ago.

His story is partly fact, partly legend and partly a merging of the two. In popular imagination, he is remembered for supposedly ridding the country of snakes. He is said to have explained the concept of the Holy Trinity by likening it to a shamrock, and in the process turning a small clover into a symbol for Ireland.

He is said to have debated with Celtic druids and talked with mythical Celtic figures in stories, which are highly entertaining if not reliable.

What is certain is that he orchestrated the seismic shift that saw Ireland abandon the pagan religions that had dominated the country for centuries, and adopt the Christian religion that would dominate it for centuries to come.

A well-known fact from his biography is that the Roman church in Britain appointed him Bishop of the Irish, and sent him to nurture and expand Ireland`s growing Christian community.

Patrick says virtually nothing about his achievements in Ireland and his humility means it is difficult to establish when he arrived, what he did and where he visited.

However, most scholars believe he arrived back in Ireland in 432 and spent most of his time working in the north. He established the diocese of Armagh which was to be a major seat of Christianity for centuries to come.

He also preached tirelessly across the region and was particularly prominent in Templepatrick, Saul, Downpatrick, Lough Derg and Croagh Patrick – all of which became closely associated with him and in some cases took his name.

Christianity survived and thrived thanks to the work of St Patrick but the church structure he established did not. He had tried to set up a diocesan structure based on parishes. This worked well in Europe but not in Ireland because there were no towns on which to base it.

After St Patrick's death, the church took a different turn with monasteries being the main centres rather than parishes and dioceses. This became the norm in Ireland for several centuries.

St Patrick gave Christianity a firm foundation in Ireland that survives to this day. In the process he became national icon whose name is synonymous with Ireland. St Patrick's Day is celebrated all across the world, and although those celebrations have little to do with religion, they still show how important a figure St Patrick is to Ireland.

(22) British Colonial Expansion in the 17th century

When James VI of Scotland became also James I of England his actual dominion did not include a single acre of soil outside the British Isles. Ninety-nine years later, when William III died, the whole of the North American seaboard between the French Acadia on the North and the Spanish Florida on the South was occupied by British colonists.

Still farther north, beyond the French Canada, England claimed possession of the Hudson Bay territory or Prince Rupert's Land. Also she was in possession of sundry islands, and the East India Company had established a footing on the Indian Peninsula. Her colonial system was in full play, and her Indian Empire was in the germ.

The conception of an Imperial England overseas, had been born in the brains of Humphrey Gilbert and Walter Raleigh while the Virgin Queen still sat on the throne of England and the world still counted Spain, which had annexed the Portuguese Empire, mistress of the seas. But Raleigh's attempts to found the colony which he called Virginia had failed woefully. The Elizabethans were still too eager in the pursuit of short cuts to wealth.

Those who were venturesome preferred preying upon Spanish galleons to settling down to a toilsome battle with nature in new lands which produced no gold nor silver nor

precious stones. But, as in ancient days, the Dane, baulked of his robbing propensities, sought to satisfy his greed of gain by commerce, the Englishman, when he could no longer spoil the Spaniard, bethought himself of turning the New World to commercial account.

In 1606 a commercial company was formed, which procured a charter for the colonisation of Virginia; for, after a vague fashion, England had asserted a claim to the territories which lay north of the Spanish possessions. The company was granted what were practically sovereign rights over a vast and undefined region (subject to the English crown).

The company's settlement at Jamestown formed the nucleus of the colony of Virginia. Here there was no native empire to be subdued, such as the Spaniards had found in Mexico and Peru, or such as that which dominated India. The native tribes were elevated only a degree above barbarism; they knew no cities, were still half nomadic, and had no political organisation higher than that of the tribe. But such an experiment as this of the English had no precedent in the world's history.

(23) The culture shock of being an international student

For any student, moving away from home can be a bit scary. But I did not expect student life in Scotland to be all that different from my home of the Netherlands. After all, we get the same news and TV shows online. Many students find the northwest climate can affect them a lot. You may find the grayness and dampness, especially during the winter months, difficult to get used to. However, when I moved from Amsterdam to study at the University of Stirling, I began to realise that a few minor issues were catching me off balance. I was suffering a minor cultural shock.

In my first year, I quickly found out my English was not as good as I had assumed. Most of my roommates were born and raised in Scotland, and I constantly found myself having to ask people to repeat themselves. Their Scottish accents did not help and I was mispronouncing names and places all the time. I also got confused about minor cultural things. Much to my flatmates' amusement, it took me two Christmases to figure out that mince pies are not actually filled with minced beef.

The linguistic barrier meant that public transport was tricky at first. I found the lack of information about bus prices and how and where to get tickets really surprising. It turned a simple 15-minute journey into a daunting task.

Then I had to adjust to a new social life. I was surprised by the campus culture in the UK – in the Netherlands, most universities don't have one main campus where you can attend university, as well as live and exercise all in the same place. But here, you never have to leave campus if you don't want to. I had to adapt to everyone being so close to each other all the time.

Parties are different here too. In the Netherlands, the less effort you put into getting ready, the better. I'd normally slip on my trusty Converse shoes, along with some clothes I could get away with wearing to class tomorrow, and wear minimal make-up. But, in my experience, partying is more formal in the UK. Your make-up needs to be flawless and your hair needs to be immaculate. You'll preferably be wearing a dress and heels, too. I was constantly having to borrow clothes off my friends just to fit in. Parties finish early and everyone just wanders off, whereas in my country that would be the time I'd leave the house.

But it is not all early closing times and strange pastries. Social behaviours may also confuse, surprise or offend you. For example, you may find people appear cold, distant or always in a hurry. Cultures are built on deeply-embedded sets of values, norms, assumptions and beliefs. It can be surprising and sometimes distressing to find that people do not share some of your most deeply held ideas, as most of us take our core values and beliefs for granted and assume they are universally held.

However, I have found lots of pleasant surprises in the UK too – and so have many other international students I know. My friend Agnes was taken aback by how sociable people are. She says she was shocked when complete strangers started talking to her at the bus stop. I, personally, was surprised by how smartly male students in Stirling dress compared to my home country.

Culture shock can knock your confidence in the beginning. But you are not alone in taking time to adapt, and soon you start to come to grips with all experiences. Studies suggest that taking a gap year or studying abroad can positively influence your brain to make you more outgoing and open to new ideas. Looking back, most of the ones I experienced made good stories to tell my friends.

(24) The Woman suffrage movement

The woman suffrage movement actually began in 1848, when a women's rights convention was held in Seneca Falls, New York. The Seneca Falls meeting was not the first in support of women's rights, but suffragists later viewed it as the meeting that launched the suffrage movement. For the next 50 years, woman suffrage supporters worked to educate the public about the validity of woman suffrage. Under the leadership of Susan B. Anthony, Elizabeth Cady Stanton, and other women's rights pioneers, suffragists circulated petitions and lobbied Congress to pass a constitutional amendment to enfranchise women.

At the turn of the century, women reformers in the club movement and in the settlement house movement wanted to pass reform legislation. However, many politicians were unwilling to listen to a disenfranchised group. Thus, over time women began to realize that in order to achieve reform, they needed to win the right to vote. For these reasons, at the turn of the century, the woman suffrage movement became a mass movement.

In the 20th century leadership of the suffrage movement passed to two organizations. The first, the National American Woman Suffrage Association (NAWSA), under the leadership of Carrie Chapman Catt, was a moderate organization. The NAWSA undertook campaigns to enfranchise women in individual states, and simultaneously lobbied President Wilson and Congress to pass a woman suffrage Constitutional Amendment. In the 1910s, NAWSA's membership numbered in the millions.

The second group, the National Woman's Party (NWP), under the leadership of Alice Paul, was a more militant organization. The NWP undertook radical actions, including picketing the White House, in order to convince Wilson and Congress to pass a woman suffrage amendment.

In 1920, due to the combined efforts of the NAWSA and the NWP, the 19th Amendment, enfranchising women, was finally ratified. This victory is considered the most significant achievement of women in the Progressive Era. It was the single largest extension of democratic voting rights in our nation's history, and it was achieved peacefully, through democratic processes.

(25) A History of Christmas in the British Isles

Although if you ask the average Briton what they associate with Christmas they may say snow, robins and Christmas gifts, the days leading up to 25 December have not always been this way.

Although Christmas takes its name from the birth of Christ, and is therefore thought of as a religious festival, many of its traditions stem from the mid-winter customs that were practised in pre-Christian Britain.

During the reign of Elizabeth I, food became a central aspect of Christmas celebrations. The banqueting course – also referred to as sweetmeat – was the finale to an elaborate meal in aristocratic households and used to display wealth. Sugar, which was increasingly being imported from the West and East Indies, was an expensive delicacy at the time, and it formed the main ingredient of these opulent dishes.

The domestic Christmas scene, and the many symbols associated with it, emerged during the reign of Victoria. In 1848 an illustration from Illustrated London News showed the royal family gathered around their tree. Other traditions that emerged during the period included:

Christmas crackers, which were invented by ingenious confectioner's apprentice Tom Smith Christmas cards, which first appeared in the 1840s Father Christmas, who some believe originated from the Norse god Odin, but who is also a culmination of European figures such as St Nicholas and the Dutch Sinterklaas.

2 семестр

Тексты социо-культурной направленности

(1) 5 Reasons Why Online Learning is the Future of Education

There's no need to discount the skepticism surrounding education through the internet. It's hard to understand the notion of leaving behind the conventional classroom, especially if it's to face this vast space called The Internet.

However, that's not reason enough to shy away from this alternative, which has proven to be valid and useful for many students. According to the most recent survey from Babson Survey Research Group, over 30 percent of higher education students in the United States are taking at least one distance course. Online education is a sensible choice whether you're a teenager or an adult. As a student, this can be a useful learning method for sharpening your skills in a difficult subject, or learning a new skill.

There are five more reasons why a student should get involved in online education.

1. It's flexible.

Online education enables the teacher and the student to set their own learning pace, and there's the added flexibility of setting a schedule that fits everyone's agenda. As a result, using an online educational platform allows for a better balance of work and studies, so there's no need to give anything up.

2. It offers a wide selection of programs.

In a space as vast and wide as the internet, there are infinite skills and subjects to teach and learn. A growing number of universities and higher education schools are offering online versions of their programs for various levels and disciplines. From music composition to quantum physics, there are options for every type of student. Studying your program online is also a great option for getting an official certificate, diploma, or degree without physically setting foot on a university campus.

3. It's accessible.

Online education enables you to study or teach from anywhere in the world. This means there's no need to commute from one place to another, or follow a rigid schedule. On top of that, not only do you save time, but you also save money, which can be spent on other priorities.

4. It allows for a customized learning experience.

Online classes tend to be smaller than conventional class size. Most of the time, online learning platforms only allow one student at a time, and in almost all cases, this allows for greater interaction and more feedback between you and your tutor.

There's often access to very diverse material such as videos, photos, and eBooks online as well, and tutors can also integrate other formats like forums or discussions to improve their lessons. And this extra content is available at any moment from anywhere, which will offer you a more dynamic and tailor-made education.

5. It's more cost-effective than traditional education.

Unlike in-person education methods, online education tends to be more affordable. There's also often a wide range of payment options that let you pay in installments or per class. This allows for better budget management. Many of you may also be subject to discounts or scholarships, so the price is rarely high. You can also save money from the commute and class materials, which are often available for free. In other words, the monetary investment is less, but the results can be better than other options.

(2) Travel Addiction is a Real Thing

Many people say they are addicted to travel, but the difference between being a travel fanatic and being a travel addict lies in what happens when you return home.

“It can be an addiction. Whether this is a medical condition depends primarily on how it affects your life,” explains Dr. Art Markman, a cognitive science specialist. “If the lows you experience after travel are so bad that you can’t really function in the rest of your life, then you want to get some help to deal with it. If you have to travel in ways that eat into the budget you need for life’s necessities, then that is a sign you should get some help.” On the other hand, he says, “if you don’t feel that your life is unmanageable, despite your real need to travel, then you are probably just at the extreme end of a continuum that includes lots of travelers.”

Sarah Bentley, a 28 year old former travel agent, explained that she feels the anxiety hit while she’s still traveling. “It almost impedes my trip because as my departure nears, my stomach forms knots and my mood completely shifts,” Bentley said. “I start to shut down before I get home, as a means to prepare myself I guess,” she adds, “which actually just makes the first week back even worse. By the time I’m leaving, the anxiety is so bad that I cry the entire flight back and am usually physically ill by the time I get home, with nothing to blame but my mental state. The next week involves a lot of anger and frustration.”

Many academic studies address compulsive travel as a “behavioral addiction.” There are three elements to a compulsive behavior that make it a behavioral addiction, according to a study on compulsive consumption: a drive or urge to engage in the particular behavior, denial of the harmful consequences of the behavior, and failure in attempts to modify the behavior.

Travel addicts feel an intense urge to travel. There are definitely times when taking a trip can be harmful in more ways than one (think terrorism, environmental effects, monetary restraints), but we still hop on a plane, mostly because we are in denial of the negative effects travel might have on our lives. The terms “dromomania,” “hypermobility,” and “binge-flying” have all been coined by researchers and authors to unofficially describe an addiction to travel.

Why do travel addicts feel so depressed when they get home? I am extremely happy with my home life; I love my job, my friends, and my lifestyle. Plus, I travel every other month. So if I have no reason to dread coming home, why are those first few days after a trip so miserable for me? “It seems that after you finish traveling, you find it hard to engage any other goals,” Markman says. “You have planned a trip, and you have had a set of wonderful experiences, and now it’s over. The combination of being drained from the trip and having focused your life and preparations on this particular trip make it difficult to really engage any other significant goals. So, for at least a week after, you feel aimless,” he nailed it. “That is actually quite normal,” Markman says. “It is hard to switch gears immediately from a great experience to return to the routine of life. It takes some time to readjust to life after the big event you have planned for.”

According to Markman, the reason travel addicts are never satisfied is because, “Whenever you achieve a goal, there is an initial sense of satisfaction, but quickly your brain looks for something else to do.” Travel is a real “process goal,” Markman says. “There is not a particular outcome you are seeking, but rather a process you love, which in this case is travel planning,” he explains. The problem is that “you expect that the trip itself will have some set of outcomes that will create a sense of completion for you.”

If our daily lives make it impossible to travel whenever we want, we need to find ways to make our daily lives as exciting as our travel lives. Pretend you are traveling in your hometown, try an activity that you would normally try only when traveling, take some day trips, learn to cook exotic foods. There are many ways to make your daily life mirror your travel life so that you can get a little bit of that high that travel gives you without actually traveling.

(3) The Gherkin: 30 St Mary Axe

30 St. Mary Axe is a 40 story building in the St. Mary Axe area of London. It is recognised as one of the more distinctive skyscrapers in the financial district of London and it stands on the former site of the Baltic Exchange building. Its form is so unique, that it has been given the nickname "the Gherkin."

The building was designed by famed architect Norman Foster of the Foster and Partners architectural firm. The Foster and Partners firm has worked on such renowned buildings as the renovated Reichstag in Berlin, London City Hall, and Wembley Stadium. They are known for their innovative approach to design that stands out particularly well against the more conservative nature of most of London's buildings.

The Gherkin is essentially an elongated, curved, shaft with a rounded end that is reminiscent of a stretched egg. It is covered uniformly around the outside with glass panels and is rounded off at the corners. It has a lens-like dome at the top that serves as a type of observation deck.

The design of the Gherkin is heavily steeped in energy efficiency and there are a number of building features that enhance its efficiency. There were open shafts built in between each floor that act as ventilation for the building and they require no energy for use. The shafts pull warm air out of the building during the summer and use passive heat from the sun to bring heat into the building during the winter. These open shafts also allow available sunlight to penetrate deep into the building to cut down on light costs. It has been said that 30 St. Mary Axe uses only half of the energy that a similarly-sized tower would use.

The beginning of the Gherkin's birth starts in 1992 as an explosion rocked the financial district of London. The Provisional IRA detonated an explosive device near the Baltic Exchange and catastrophically injured the building. The building was torn down and city officials decided to put a larger tower in its place.

The Gherkin began as a much larger building that was dubbed the "Millennium Tower" but which failed to materialise. The original design of the building raised fears that it could negatively impact air traffic from Heathrow. There were also concerns that it may interfere with the sight-lines of St. Paul's Dome from certain parts of the city. Once the original design was shot down, Norman Foster created the scaled-down version that now sits at 30 St Mary Axe.

Construction began in 2001 and the Gherkin was finished in December of 2003. It didn't open for the public until almost half of a year later.

Today, the Gherkin is primarily an office building. It is the headquarters of many large companies including Swiss Re and some of the offices of Sky News. Some very popular television shows and radio shows are filmed here or near this building today.

(4) The struggle of the Roman Catholic church and Henry VIII

The English Reformation started in the reign of Henry VIII. The English Reformation was to have far reaching consequences in Tudor England. Henry VIII decided to rid himself of his first wife, Catherine of Aragon, after she had failed to produce a male heir to the throne. He had already decided who his next wife would be – Anne Boleyn. By 1527, Catherine was considered too old to have any more children.

However, a divorce was not a simple issue. In fact, it was a very complicated one. Henry VIII was a Roman Catholic and the head of this church was the pope based in Rome.

The Roman Catholic faith believed in marriage for life. It did not recognize, let alone support, divorce. Those who were widowed were free to re-marry; this was an entirely different issue. But husbands could not simply decide that their marriage was not working, divorce their wife and re-marry. The Roman Catholic Church simply did not allow it.

This put Henry VIII in a difficult position. If he went ahead and announced that as king of England he was allowing himself a divorce, the pope could excommunicate him. This meant that under Catholic Church law, your soul could never get to Heaven. To someone living at the time of Henry, this was a very real fear, and a threat which the Catholic Church used to keep people under its control.

Another approach Henry used was to make a special appeal to the pope so that he might get a special “Papal Dispensation”. This meant that the pope would agree to Henry’s request for a divorce purely because Henry was king of England but that it would not affect the way the Catholic Church banned divorce for others. The pope refused to grant Henry this and by 1533 his anger was such that he ordered the Archbishop of Canterbury to grant him a divorce so that he could marry Anne Boleyn.

The Archbishop granted Henry his divorce – against the wishes of the pope. But what else could the archbishop do if he wanted to remain on good terms with Henry?

This event effectively led to England breaking away from the Roman Catholic Church based in Rome. Henry placed himself as head of the church and in that sense, in his eyes, his divorce was perfectly legal. In 1533, few were brave enough to tell him otherwise!

How did the people of England react to this? In fact, the vast bulk of the population were very angry at the way the Roman Catholic Church had used them as a source of money. To get married you had to pay; to get a child baptised (which you needed to be if you were to go to Heaven – so the Catholic Church preached) you had to pay; you even had to pay the Church to bury someone on their land (which you had to do as your soul could only go to Heaven if you were buried on Holy Ground). Therefore, the Catholic Church was very wealthy while many poor remained just that....poor. Their money was going to the Catholic Church. Therefore, there were no great protests throughout the land as many felt that Henry would ease up on taking money from them. Henry knew of the Catholic Church’s unpopularity and, therefore, used this to his advantage.

Henry was made Supreme Head of the Church by an Act of Parliament in 1534. The country was still Catholic but the pope’s power had been ended.

(5) England’s Newest Tourist Attraction

Are you planning a visit to England? Are you thinking to yourself, “What shall we do in England? Are there any really special places that we must go to when we are there?” You are? Good, then this podcast is for you.

When you are in England, you could visit the Tower of London. But everyone visits the Tower of London. Or you could spend a day in Stratford-on-Avon, where Shakespeare was born. But everyone goes to Stratford. No, England’s newest tourist attraction is the M25

Motorway, which is the motorway that runs in a circle around London. It is 188 kilometers long; it is Britain's busiest motorway, and one of the busiest roads in Europe. A bus company in Brighton now offers coach trips round the M25, and business is brisk. It seems that lots of people like nothing more than sitting in a coach on a motorway. So let us pay £15 for our ticket, and board the coach which will take us on this amazing adventure.

We head north from Brighton to the motorway, and then drive down the slip road. There are of course two possible ways that we can travel around the M25. We can turn left and travel clockwise, or we can turn right and travel anticlockwise. Today the driver decides to take us anticlockwise. As well as the driver, there is a guide on the coach who tells us about the interesting things we can see – things like “junctions” and “road signs”. The motorway today is busy, but not yet congested. We are a little bit disappointed by this. We hoped that we would find a traffic jam, because the M25 is famous for its traffic jams. Indeed, some people call the M25 the “largest car park in Britain”. Never mind, there is still a long way to go, and maybe we will find a traffic jam later.

Now the coach is taking us around the south-east edge of London. Soon we will come to the River Thames. Because we are travelling anticlockwise, we go under the river in a tunnel. Traffic going the other way crosses the river on a bridge. We have to pay a toll to use the river crossing. In the rush hour, there can be long delays at the toll booths, but today we only have to wait about 10 minutes.

And then, the highlight of our tour! Signs over the motorway tell us that there has been an “incident”. An “incident” means, simply, something which has happened. Generally, we use it to mean something unusual or unpleasant. “Incident” is the sort of word which the police use when they don't want to tell us anything. So, what sort of incident could it be? An accident involving three lorries and twenty cars perhaps? Or a gunfight with a gang of armed criminals? Or a cow, which has escaped from its field and run onto the motorway? But when we reach the “incident”, there is nothing to see but a broken-down lorry and a police car.

Then we turn off the motorway, and soon we are back in Brighton. The passengers say thank you to our driver and our guide, and get off the coach to be greeted by their families and friends who are waiting for them. Our adventure by coach around the M25 has

taken us only four hours, but we will carry the happy memories with us for the rest of our lives. If you have an equally wonderful tourist experience in your country, why not leave a comment on the website to tell us about it.

(6) William Wallace and the First War of Scottish Independence

A great strife engulfed the Kingdom of Scotland by the end of the 13th century. The benevolent and prosperous rulership of King Alexander III ended abruptly when he fell off the horse and broke his neck in an accident. He's left no heir, and his distant relative, a child queen Margaret, who was to succeed him in usual circumstances, has also died of mysterious illness.

Thus began the period of Scottish history that later would earn a moniker of the Great Cause. More than 100 judges were appointed to oversee the contenders who were feuding for a vacant Scottish throne. One of the most promising claimants, John Balliol, has forged an alliance with a representative of English king Edward I, also known as Edward Longshanks. No man could foresee that this presumably clever idea would soon throw both nations into a 30-years long war.

King Edward I has already sought to extend his dominion over Scotland for quite a long time. His supporting John Balliol was but an attempt to turn Scotland into a vassal state that would help him wage a war with France. Not very surprisingly, King Edward was outraged when John, who by that time had won in the Great Cause and was himself a king, allowed the leading men of his kingdom to make a quick alliance with France and abandon any allegiance to King Edward whatsoever. An inevitable English invasion was soon to follow.

As Scotland was losing one major battle after another, many Scottish nobles across the country were forced to swear fealty to Edward I. But for any such noble, an uprising would start elsewhere, and each such uprising would have its own leader to emerge. One of such leaders was a Scottish knight, sir William Wallace.

Wallace had risen to prominence first when he led an attack on an English garrison in a small town of Lanark. Together with his men he managed to kill a sheriff who'd enforce

English law, and escape with a woman, who, as contemporary sources seem to imply, was his wife and who's helped him to stage an attack. This was a very daring strike against English authority and soon enough many rebels across the country have sought Wallace and rallied under his banners. William has even managed to gain the blessing of Scottish church, thus, by medieval standards, gaining some degree of relative legitimacy.

His most famous battle though was the one of the Stirling Bridge. Extremely outnumbered, under the leadership of Wallace the Scottish army has managed to hold and eventually route an elite cadre of English troops. The battle commenced on a small wooden bridge over the river Forth, which could let only three men or two horses cross it shoulder to shoulder. As English army was busy crossing, Wallace waited in ambush behind the hill overseeing the bridge. When there was no more room for a crossing army to retreat, but it was still not quite ready for a fight, Wallace and his men hailed⁷ upon unsuspecting invaders and massacred them. The bulk of English army that was still waiting to cross the bridge, seeing the events unfolding at the other side, decided to destroy the bridge and retreat. Subsequently it was scattered and many supply wagons were captured by Scottish army. What was thought to be a victory march for English turned into a humiliating defeat that left a large swath of territory in the hands of Scottish and encouraged the rebels to fight for many more years.

William Wallace was captured by English knights on August 5, 1305. He was tried by English court, found guilty of high treason and sentenced to be hanged, drawn and quartered. But the First War of Scottish Independence was still fought by many other Scottish patriots throughout the land, and formally ended in 1328 with a treaty that confirmed Scottish independence, almost 25 years after his death.

(7) Magna Carta

Following a revolt by the English nobility against his rule, King John puts his royal seal on Magna Carta, or "the Great Charter," on June 15, 1215. The document, essentially a peace treaty between John and his barons, guaranteed that the king would respect feudal rights and privileges, uphold the freedom of the church, and maintain the nation's laws.

Although more a reactionary than a progressive document in its day, Magna Carta was seen as a cornerstone in the development of democratic England by later generations.

John was enthroned as king of England following the death of his brother, King Richard the Lion-Hearted, in 1199. King John's reign was characterized by failure. He lost the duchy of Normandy to the French king and taxed the English nobility heavily to pay for his foreign misadventures. He quarreled with Pope Innocent III and sold church offices to build up the depleted royal coffers. Following the defeat of a campaign to regain Normandy in 1214, Stephen Langton, the archbishop of Canterbury, called on the disgruntled barons to demand a charter of liberties from the king.

In 1215, the barons rose up in rebellion against the king's abuse of feudal law and custom. John, faced with a superior force, had no choice but to give in to their demands. Earlier kings of England had granted concessions to their feudal barons, but these charters were vaguely worded and issued voluntarily. The document drawn up for John in June 1215, however, forced the king to make specific guarantees of the rights and privileges of his barons and the freedom of the church. On June 15, 1215, John met the barons at Runnymede on the Thames and set his seal to the Articles of the Barons, which after minor revision was formally issued as Magna Carta.

The charter consisted of a preamble and 63 clauses and dealt mainly with feudal concerns that had little impact outside 13th century England. However, the document was remarkable in that it implied there were laws the king was bound to observe, thus precluding any future claim to absolutism by the English monarch. Of greatest interest to later generations was clause 39, which stated that "no free man shall be arrested or imprisoned or disseised [dispossessed] or outlawed or exiled or in any way victimised...except by the lawful judgment of his peers or by the law of the land." This clause has been celebrated as an early guarantee of trial by jury and of habeas corpus and inspired England's Petition of Right (1628) and the Habeas Corpus Act (1679).

In immediate terms, Magna Carta was a failure—civil war broke out the same year, and John ignored his obligations under the charter. Upon his death in 1216, however, Magna Carta was reissued with some changes by his son, King Henry III, and then reissued again in 1217. That year, the rebellious barons were defeated by the king's forces. In 1225, Henry III voluntarily reissued Magna Carta a third time, and it formally entered English statute law.

(8) University education in Great Britain

There are more than 60 universities in Britain. But not all universities are equal. They differ from one another in history, tradition, academic organization. Not all British universities have a well-known reputation. Oxford and Cambridge, the oldest universities, are world-known for their academic excellence. The University of London has the size and breadth to rank among the UK's top universities. A university usually consists of colleges. The departments of the colleges are organized into faculties.

University teaching in the UK differs greatly at both undergraduate and postgraduate levels from that in many other countries. An undergraduate programme consists of a series of lectures, seminars, tutorials and laboratory classes which in total account for about 15 hours per week.

Following a particular programme students take series of lecture courses which may last one academic term or the whole year. Associated with each lecture course are seminars, tutorials, laboratory classes which illustrate the topics presented in the lectures.

Lectures are given to large groups of students (from 20 to 200). Seminars and tutorials are much smaller than lecture classes and in some departments can be on a one-to-one basis (one member of staff and one student). Students prepare work in advance for seminars and tutorials. And this can take the form of a topic for discussion by writing essays or by solving problems. Lectures, seminars and tutorials are all one hour in length, laboratory classes last two or three hours. Each student has a tutor whom he can consult on any matter whether academic or personal.

The academic year is split into three terms. Formal teaching takes place in the first two terms which last for twenty four weeks in total. The third term is reserved for classes and examinations and lasts for six weeks.

Universities teach in all major subject areas: arts, science, law, engineering, medicine, social sciences.

University staff are chosen for the best knowledge in their subject. The teaching encourages students to learn in the most effective way. University degree courses extend from three to four years. After three years of study at the University graduates will leave with the Degree of Bachelor of Arts or Science. They can continue to take their Master's Degree and then the Doctor's Degree.

(9) Environmental protection

Environmental protection refers to any measure that is taken to conserve, maintain or preserve the state of the environment. Protection of the environment can be done through reducing pollutants or anything that leads to its degradation.

Conservation of the environment aims at keeping it safe and healthy. It aims at the reduction of overusing the natural resources. It is the taking care of all the components that make up the environment. Preserving is also used hand in hand with the term conserving. Environmental preservation refers practices that do not alter the environment. It aims at keeping the environment unchanged so as to leave it intact.

When the environment is protected it serves to benefit all those who rely on it. It serves in the maintenance of life for the plants, humans and animals.

The environment has suffered due to the scientific inventions. A lot has been discovered over the years. Many of these inventions tend to be harmful to the environment, though it is a way of the human race trying to make their life better. Factories have been built in so many places around the world. The emission of harmful gases into the air is on the increase. The dredging of oil in the sea is also another case. Trees are being cut down to create space for more land. With all this going on, the environment remains at or mercy for protection.

The first thing everyone with a good amount of money is thinking about is how to get a car. The purchase of cars has grown over the years. The worst part is that there are not many cars that are environment friendly. Most of them use fuel which when burnt, releases carbon into the air. Factories are also playing a role in this. Carbon gases are not in any way friendly to the environment and this is why we need to protect it.

The chemicals that go into making plastics is highly toxic and it poses serious threats to the environment. Burning of plastics during their production and even after use releases toxic fumes into the air. The toxins can also leak into the soil and ground water causing contamination. This makes it difficult to grow plants and even pose a challenge to hormones in many living things. Biodiversity is important.

For the environment to be a better place to live, biodiversity has to be a part of it. In science it is said that during the day, plants use carbon dioxide, while humans breathe in oxygen and breathe out carbon dioxide. This is a form of exchange plan. Plants help to reduce

carbon dioxide in the air, which in turn benefits humans. Each living has a role to play in the environment. It makes the world a better place to live in.

(10) Voting system of the Russian Federation

The voting system of the Russian Federation combines several types of electoral systems

In accordance with the Constitution of the Russian Federation, 450 members (deputies) are elected to the State Duma for a term of five years. Deputies are elected by Russian citizens eligible to cast a vote on the basis of universal, equal and direct suffrage by secret ballot.

Elections of members of the State Duma are appointed by the President of the Russian Federation. The decision to call elections shall be made no earlier than 110 days and no later than 90 days before voting day. The voting day is the third Sunday of the month when the term of the previous State Duma expires. The term of the new State Duma starts on the voting date. The last elections during which the State Duma of the 7th convocation was elected were held on September 18, 2016.

Nowadays a mixed voting system is applied in Russia. 225 deputies, this is a half of the total number, are elected by majority voting in single-mandate constituencies (one constituency is one deputy), and the second half is elected by a proportional representation with a 5% barrier in a single federal district.

The number of votes cast for a federal list of candidates is defined as the sum of votes cast in each region of the Russian Federation and abroad. The federal constituency covers the entire territory of the Russian Federation.

Single-mandate constituencies are formed by dividing the total number of voters registered in Russia by 225 (the total number of single-mandate constituencies).

The decision to nominate a federal list of candidates, as well as to nominate candidates to single-mandate constituencies is taken by secret ballot at a congress of a political party.

A political party has the right to nominate only one candidate in one single-mandate constituency. A Russian citizen is entitled to participate in elections in a single-member constituency as a self-nominated candidate.

A political party that nominates a federal list of candidates is obliged to create its own electoral fund to finance its election campaign. All candidates have equal rights and equal responsibilities.

(11) Russia's seven wonders

Art, architecture and culture join with virgin wilderness and sun-splashed beaches, making Russia truly an adventurous travellers' wonderland. From the volcanoes and geysers of Kamchatka, through the Siberian taiga to the mineral spas around the Black Sea coast, it cannot be said Russia has nothing to offer the average tourist.

But figures cited by tourism experts showed that 70-80 percent of 3.5 million foreign tourists that came to the country last year rarely ventured farther than Moscow, St. Petersburg and perhaps the Golden Ring.

An alternative Seven Wonders of the World could easily be unearthed on Russia's territory, if only tourists were willing to dig them out.

Untouched, unharmed and largely undiscovered by Western tourists, the so-called golden mountains of Russia's Altai republic are noted for being among the most beautiful and primordial parts of Siberia. The Altai mountain chain is set in a rich and diverse landscape of steppe, taiga and semi-desert, and stretches about 2,000 kilometres from Mongolia's Gobi Desert to the West Siberian Plain, through Chinese, Mongolian, Russian and Kazak territory. Areas of the Caucasus mountains, which rise dramatically above the Black Sea coast and run down to the Caspian Sea, are also noted for their plant diversity, subalpine pastures grazed by wild animals and lack of human disturbance. Here, one can go skiing, scale Europe's highest peak — the 5,642-meter Mount Elbrus — and relax at the spas of Mineralniye Vody.

Travellers can visit Kamchatka to see its hot springs and view its wildlife and spectacular sunsets. Kamchatka, a more than 1,000-kilometer-long peninsula dividing the Sea of Okhotsk from the Pacific Ocean, is said to be one of the least explored regions on Earth. The most amazing attraction is the Valley of the Geysers in Kronotsky National Park, which was only discovered in the 1940s. Its 180 or more volcanoes, thermal activity, hot springs, heated rivers and geysers should be enough to attract any tourist. Inhabited by less than one person per square kilometre, the peninsula boasts at least 14,000 rivers, 10,000 lakes, thousands of brown bears and sable, and hundreds of bird and plant species indigenous to the area.

Among the best waters to ply are the crystal-clear depths of the pearl of Siberia — Lake Baikal — one of the genuine Seven Natural Wonders of the World. An impressive

spectacle near the border of Russia and Mongolia, Lake Baikal is 636 kilometres long and 80 kilometres wide — and is the world's deepest lake. Surrounded by forests and mountain peaks, the waters are transparent to a depth of 40 meters in the summer, and freeze over so thick in the winter that the Trans-Siberian Railroad once ran over its surface. The lake has more than 2,000 recorded plant and animal species — bears, elk, lynx, sables, freshwater seal, trout, salmon and sturgeon. It is fed by 336 rivers, with only one river feeding out.

One of the most famous ways to explore Siberia's vast expanse — and probably the dream of many a foreigner — is the mythical Trans-Siberian Railroad. The Trans-Siberian Railroad is now the longest continuous rail line on earth. Lake Baikal, Ulan Ude in Buryatia and Vladivostok, Far East, are all along the journey.

(12) The historical heart of Moscow - the Kremlin

The cultural life of the capital is very rich. Muscovites are proud of their museums: the Tretyakov Gallery, the Museum of Fine Arts named after A.S.Pushkin, the Kuskovo Museum, Kolomenskoye, Ostankino Serfs Art Museum, museums of Moscow Kremlin, literary museums and many others.

The historical heart of Moscow is the Kremlin. It is a monument of Russian history and culture. In ancient times every large town had its kremlin. The kremlin is the part of a town surrounded by high walls. The word “kremlin” means “fortress”.

The first walls of the Moscow Kremlin were made of wood eight centuries ago. The Kremlin was later reconstructed with stone during the XIV century. The Moscow Kremlin achieved its present appearance by the end of XV century.

The Kremlin was the original center of Moscow while the other parts of the town grew up.

The cathedrals, palaces and monasteries during the centuries have transformed in into a great museum. The buildings of the Kremlin give the best examples of Russian architecture. New buildings have been added for public offices. It is surrounded by a 2 km long wall with 20 towers with an area of 28 hectares and it is situated in the heart of the capital.

Cathedral Square was called Parade Square. But now it isn't used for military parades. Three finest cathedrals of the Kremlin and the belfry of Ivan the Great stand around it. Blagoveshchensky Sobor is a replica of the cathedral at Vladimir with the iconostasis made by Theophanes the Greek and Andrey Rublev. Arkhangelsky Sobor was built by the Italian

Alevisio Novy. The tombs of the Tsar and Russian princes from Ivan Kalita are in this cathedral. Uspensky Sobor is the largest of the Kremlin.

Ivan the Great's Belfry is 82 m high. It is a magnificent example of the 16th century architecture, built of white stone, with 3 stories by the Italian Bono Friasin. Beside the belfry (tower) the Emperor Bell (Tsar-Kolokol) stands on a granite pedestal. It was cast by Matorin in 1735. Next to the Bell there is the famous Emperor Cannon (Tsar-Pushka). It was cast in 1586 by Andrey Chokhov, it shows standard of metallurgy. It has never fired.

The Armoury Chamber is now a Museum of Decorative Arts. It was built in 1849-51 years in a pseudo-Russian style after a design by Thon. It is one of the oldest museums in Europe. It was first used for storing models of weapons then a court treasure and museum. In 1920s the treasure of the Patriarchs was added to the collection.

The State Kremlin Palace is the largest theatre in the world. The first theatre and concert season was opened in December 1961 by the Tchaikovsky ballet Swan Lake. Leading companies and orchestras visit Moscow to perform at the Kremlin Palace. The Kremlin Ballet is based here. International conferences are also held at the State Kremlin Palace. The State Kremlin Palace was constructed in less than two years. The State Kremlin Palace is the only modern architectural structure in the Kremlin.

(13) Places of interest in Moscow (1)

The Moscow Kremlin is the best illustration of the history of Russia. The Alexandrovsky Garden is situated along the western Kremlin wall. In the garden there is the Tomb of the Unknown Soldier.

For the 50th anniversary of the end of the Second World War a memorial was erected on the Poklonnaya Hill. Besides the monument to G.K.Zhukov, the outstanding military commander, was set up in front of the History Museum.

The Historical Museum is located in front of Red Square. It was designed by the English architect Sherwood in a pseudo-Russian style. The building of Moscow University stood in that place. The museum keep 4 mln items connected with the Russian history from distant ages to the end of last century. Tools, weapons, ornaments and books give a very clear picture of Russian civilization.

The National Museum of the Fine Arts is known as the Pushkin's Museum since 1937. This great marble building was built in 1812 in neo-Greek style. In 1924 it became the central

art gallery of Moscow. The collection was from the Great Kremlin Palace, Hermitage Museum in Leningrad and private collections confiscated from emigres, for example Shchukin and Morosov's collections of French Impressionists.

There are many interesting galleries in our country. The Tretyakov Gallery is one of the famous and the well-known picture galleries in our country and over the world. The State Tretyakov Gallery is situated in a Russian-looking building in the centre of Moscow. This gallery is named after its founder Peter Tretyakov. He began to collect Russian paintings in 1856. He wanted these paintings to be seen by people. In 1861 he opened his collection to the public. The gallery has got many halls. It has a rich collection of early Russian art, including the icons by Andrey Rublev and Simon Ushakov. One of the halls is devoted to the great Russian paintings of the 18th and 19th centuries. We can see pictures by such painters as Serov, Repin, Ivanov, Levitan and others. The first works in Tretyakov's collection were the paintings of the "Peredvizhniki". The collector bought paintings "Morning in a Pine Wood" by Shishkin, "Ivan Tsarevich on the Grey Wolf", "Alyonushka", "The Bogatyrs" by Vasnetsov, "March" by Levitan.

The oldest theatre of opera and ballet in our country is the Bolshoy Theatre. The best ballet performances and Russian and foreign operas are performed in this theatre. It was founded in 1776 as the Petrovsky Theatre. The building of this theatre was destroyed by fire in 1805. In 1824 the architect Bove designed a new building called the Bolshoy Petrovsky Theatre. This building was destroyed by fire in 1853. The theatre was rebuilt and opened in 1856.

The Maly Theatre is the oldest drama theatre in the capital of our country. It was named the Maly Theatre in 1824 Alexander Ostrovsky wrote most of the plays specially for the Maly Theatre and sometimes it is named as Ostrovsky House. A monument to the great dramatist A.Ostrovsky was erected in front of the theatre in 1929.

(14) Places of interest in Moscow (2)

Petrovsky Palace was built to commemorate the Russian victory over the Turks. The palace was built by architect Kazak. It was named after the village of Petrovskoye. The Petrovsky Palace was intended as a last resting-place for Catherine the Great on her journeys from St.Petersburg to Moscow. The style is a combination of traditional Russian and gothic architecture. In 1812 Napoleon lived here for several days.

Novodevichy Monastery was founded in 1524. Its domes can be seen from a long way off. It has got its name of “New Monastery of the Virgin” to the icon of Virgin of Smolensk which it guarded in troubled times. The Monastery is rich in historical memories the elections of Boris Godunov, the battles with the Poles in 1610 and etc. Many great Russians were buried at the cemetery of Novodevichy: Gogol, Chekhov, Scriabin, great doctors and politicians.

This ancient estate Kolomenskoye was the residence of Russian princes and tsars. It was first mentioned in documents dating from the first half of the XIVth century. In the XVIth century Kolomenskoye was the favourite country estate of Grand Prince Vasily III, then of Ivan the Terrible. The Church of the Ascension was built in 1532 for Vasily III. This church is one of the best examples of ancient Russian architecture. There are several other historic buildings on the Kolomenskoye royal estate. There is also an exhibition of ancient Russian wooden architecture including Peter the Great’s House, which was brought here from Arkhangelsk.

To the south of Kolomenskoye village lay land belonging to the Godunovs. The Tsaritsa Irina owned an estate called Chornaya Gryaz. In 1775 it was purchased by Catherine the Great, who wanted an estate in the Gothic style to commemorate the Russian victory over the Turks. The architect Bazhenov designed the buildings. Catherine was not pleased with the result and Kazakov began work on a new project that was never completed. After Catherine the Great’s death the building was stopped and the palace became a ruin.

This ancient street was first mentioned as the Arbat (Orbat) in a manuscript dated 1493. It was important for both trade and military strategy. In 1812 the Russian army passed here on their return from the Battle of Borodino. On September 3 a fire began at the Arbat and Smolensky Market. A.S.Pushkin lived at № 53 for a short time in 1831, after his marriage to Natalya Goncharova. Tchikovsky stayed with his brother in the same house. There is now a Pushkin Museum at this address. In September 1879 Tolstoy visited his niece Obolenskaya at № 9.

(15) Sustainable supermarkets

Many of the major supermarket chains have come under fire with accusations of various unethical acts over the past decade. They’ve wasted tonnes of food, they’ve underpaid their suppliers and they’ve contributed to excessive plastic waste in their packaging, which has had its impact on our environment.

But supermarkets and grocers are starting to sit up and take notice. In response to growing consumer backlash against the huge amounts of plastic waste generated by plastic packaging, some of the largest UK supermarkets have signed up to a pact promising to transform packaging and cut plastic wastage. In a pledge to reuse, recycle or compost all plastic wastage by 2025, supermarkets are now beginning to take some responsibility for the part they play in contributing to the damage to our environment, with one major supermarket announcing their plan to eliminate all plastic packaging in their own-brand products by 2023.

In response to criticisms over food waste, some supermarkets are donating some of their food surplus. However, charities estimate that they are only accessing two per cent of supermarkets' total food surplus, so this hardly seems to be solving the problem. Some say that supermarkets are simply not doing enough. Most supermarkets operate under a veil of secrecy when asked for exact figures of food wastage, and without more transparency it is hard to come up with a systematic approach to avoiding waste and to redistributing surplus food.

Some smaller companies are now taking matters into their own hands and offering consumers a greener, more environmentally friendly option. Shops like Berlin's Original Unverpakt and London's Bulk Market are plastic-free shops that have opened in recent years, encouraging customers to use their own containers or compostable bags. Online grocer Farmdrop eliminates the need for large warehouses and the risk of huge food surplus by delivering fresh produce from local farmers to its customers on a daily basis via electric cars, offering farmers the lion's share of the retail price.

There is no doubt that we still have a long way to go in reducing food waste and plastic waste. But perhaps the major supermarkets might take inspiration from these smaller grocers and gradually move towards a more sustainable future for us all.

(16) Tate Modern – Origin

In December 1992 the Tate Trustees announced their intention to create a separate gallery for international modern and contemporary art in London.

The former Bankside Power Station was selected as the new gallery site in 1994. The following year, Swiss architects Herzog & De Meuron were appointed to convert the building into a gallery. That their proposal retained much of the original character of the building was a key factor in this decision.

The iconic power station, built in two phases between 1947 and 1963, was designed by Sir Giles Gilbert Scott. It consisted of a stunning turbine hall, 35 metres high and 152 metres long, with the boiler house alongside it and a single central chimney. However, apart from a remaining operational London Electricity sub-station the site had been redundant since 1981.

In 1996 the design plans were unveiled and, following a £12 million grant from the English Partnerships regeneration agency, the site was purchased and work began. The huge machinery was removed and the building was stripped back to its original steel structure and brickwork. The turbine hall became a dramatic entrance and display area and the boiler house became the galleries.

Since it opened in May 2000, more than 40 million people have visited Tate Modern. It is one of the UK's top three tourist attractions and generates an estimated £100 million in economic benefits to London annually.

In 2009 Tate embarked on a major project to develop Tate Modern. Working again with Herzog & de Meuron, the transformed Tate Modern makes use of the power station's spectacular redundant oil tanks, increasing gallery space and providing much improved visitor facilities.

(17) Saint Valentine's Day

Hallmark holiday refers to a holiday that is perceived to exist mainly for commercial reasons, rather than to celebrate a traditionally significant religious or secular event. Although many people view these celebrations in a negative way, others have positive views. On the negative side, hallmark holidays don't really celebrate an important event, and only exist for companies to make a lot of money. On the positive side, the term describes the perfect holiday in which family, friends, and fun come first. Everyday problems, worries, and stress can be put aside. Valentine's Day, which is celebrated on February 14, is usually considered to be one of the hallmark holidays.

In Valentine's Day billions of cards are sent. It is also an opportunity for customers to buy chocolates, flowers, engagement rings, romantic dinners, and so on. This commercial aspect can be traced back to the 19th century when printing technology improved to cheaply mass-produce greeting cards. But the origin of the celebration is much more ancient and can be traced back to a Roman festival called "Lupercalia" which was held in mid-February every year. The celebration purified new life in the spring. Around the third century A.D., the holiday became associated with Saint Valentine, although it isn't exactly clear how.

A popular explanation of the link between Saint Valentine and the Holiday says that at the time of the Roman "Lupercalia" Festival marriage was a common tradition, but when Claudius became Emperor he changed all of that. He outlawed all marriages because he was afraid that men would refuse their duty to fight because they would not want to leave their wives behind. Young couples still fell in love though and still wished to marry and they took these desires to the Catholic Bishop Valentine who, understanding love, began to secretly marry couples. When Claudius found out, he arrested Valentine and sentenced him to death. While waiting in prison, Valentine began exchanging letters with the prisoner's daughter and soon had fallen in love with her. The day he was to be beheaded, he wrote her one last note and signed it: "From Your Valentine".

In 496 A.D. Christianity had taken over Rome and Pope Gelasius outlawed the pagan Lupercian Festival. Knowing its popularity, he looked to replace it with something more "appropriate" and set aside a day in February to honor the martyr St. Valentine. Even though in 1969 the church removed St. Valentine's Day from its calendar of "official" holidays, it is still widely celebrated today. And although Valentine's Day has become quite commercial, it still contains an important aspect shared by all of the best holidays – time spent thinking of and being with the one you love.

(18) Reassessing the Impacts of Brain Drain on Developing Countries

Brain drain, which is the action of having highly skilled and educated people leaving their country to work abroad, has become one of the developing countries concern. Brain drain is also referred to as human capital flight. More and more third world science and technology educated people are heading for more prosperous countries seeking higher wages and better working conditions. This has of course serious consequences on the sending countries.

While many people believe that immigration is a personal choice that must be understood and respected, others look at the phenomenon from a different perspective. What makes those educated people leave their countries should be seriously considered and a distinction between push and pull factors must be made. The push factors include low wages and lack of satisfactory working and living conditions. Social unrest, political conflicts and wars may also be determining causes. The pull factors, however, include intellectual freedom and substantial funds for research.

Brain drain has negative impact on the sending countries economic prospects and competitiveness. It reduces the number of dynamic and creative people who can contribute to the development of their country. Likewise, with more entrepreneurs taking their investments abroad, developing countries are missing an opportunity of wealth creation. This has also negative consequences on tax revenue and employment.

Most of the measures taken so far have not had any success in alleviating the effects of brain drain. A more global view must take into consideration the provision of adequate working and living conditions in the sending countries. Another option should involve encouraging the expatriates to contribute their skill to the development of their countries without necessarily physically relocating.

(19) The civilized side of the Vikings

At the end of the AD 700s the Scandinavian people entered in a period of great expansion. The family groups of farmers and traders who comprised a large part of the people of the area began to feel the effects of over-population. With the expansion many other factors came into play: colonization, trade and the individual search for new kingdoms to conquer.

The great period of the Vikings lasted from the 700s to 1050. The Scandinavians held dominance over large areas of northern Europe. Their exploration, trade and settlement reached from the Black Sea to Newfoundland. In this period the Vikings were very influential in Western Europe. The Scandinavians occupied large areas of Britain where they settled as farmers and merchants. They influenced the development of the English language, left many place names and even some surviving marks on the British social and political institutions today. They established a self-supporting community in Iceland which in later years gave posterity the long narrative poems called sagas.

In Europe the Vikings occupied large areas of Northern France and through the Norman invasion had a second impact on Britain. They traded to the Mediterranean from the west and down the great rivers of Russia to the Black Sea in the east.

In all these great movements Vikings were assisted by their development of efficient seagoing vessels. The ship was at the heart of the Viking civilisation — they were superb shipbuilders. But though ship may have represented the peak of Viking technical achievement they excelled in other ways. The Scandinavians developed an art of surface decoration expressed in wood carving, in tapestries, in jewelry and in stone carving.

The Viking contribution to European history, their cultural, aesthetical, commercial effects of their expansion were great. Tapestry, wood carvings, musical instruments, drinking horns, bronze statues, rune stones, and silver dishes convey the religious and cultural life of these remarkable people. The Vikings should be regarded not only as romanticized pirates, but as one of the important historical phenomena in the development of modern Europe.

(20) Education

Education encompasses both the teaching and learning of knowledge, proper conduct, and technical competency. It thus focuses on the cultivation of skills, trades or professions, as well as mental, moral & aesthetic development.

Formal education consists of systematic instruction, teaching and training by professional teachers. This consists of the application of pedagogy and the development of curricula.

The right to education is a fundamental human right. Since 1952, Article 2 of the first Protocol to the European Convention on Human Rights obliges all signatory parties to guarantee the right to education. At world level, the United Nations' International Covenant on Economic, Social and Cultural Rights of 1966 guarantees this right under its Article 13.

Educational systems are established to provide education and training, often for children and the young. A curriculum defines what students should know, understand and be able to do as the result of education. A system of policies, regulations, examinations, structures and funding enables teachers to teach to the best of their abilities. Sometimes educational systems can be used to promote doctrines or ideals as well as knowledge, which is known as *social engineering*. This can lead to political abuse of the system, particularly in totalitarian states and government.

Primary (or elementary) education consists of the first years of formal, structured education. In general, primary education consists of six or seven years of schooling starting at the age of 5 or 6, although this varies between, and sometimes within, countries. Globally, around 70% of primary-age children are enrolled in primary education, and this proportion is rising.

In most contemporary educational systems of the world, secondary education consists of the second years of formal education that occur during adolescence. It is characterized by transition from the typically compulsory, comprehensive primary education for minors, to the optional, selective tertiary, “post-secondary”, or “higher” education (e.g., university, vocational school) for adults.

Higher education, also called tertiary, third stage, or post secondary education, is the non-compulsory educational level that follows the completion of a school providing a secondary education, such as a high school or secondary school. Tertiary education is normally taken to include undergraduate and postgraduate education, as well as vocational education and training. Colleges and universities are the main institutions that provide tertiary education. Collectively, these are sometimes known as tertiary institutions. Tertiary education generally results in the receipt of certificates, diplomas, or academic degrees.

(21) The evolution of boarding schools in the UK

In the UK, boarding schools are mostly private institutions, associated with high society, but some of the first boarding schools were established to support the children of poorer families. Boarding schools first sprung up in the UK as far back as medieval times, when boys were sent to monasteries or noble households to be taught Latin and Theology in order to become religious leaders. Thus, the first boarding schools were strongly associated with Christianity.

The King’s School Canterbury brands itself the oldest school in the world, with education taking place in its grounds since 597 AD, when St Augustine arrived in England on crusade and founded a monasterial school. The school was reinstituted in 1541 by Royal Charter. King’s Ely is another British boarding school that classes itself amongst the oldest schools in the world, founded in 970 AD. In 1541, it was re-endowed and retitled by Henry VIII in the course of the Dissolution of the Monasteries.

Founded in 1382, Winchester College markets itself as the English school with the longest continuous history. Established by the Bishop of Winchester and Chancellor of England, William of Wykeham, Winchester College was intended to educate boys from poor

families to become clergy. Winchester College was to act as a feeder to New College, Oxford, also founded by Wykeham. The school maintains its legacy of generosity today, offering one of the most comprehensive bursary programmes in the country. In fact, nearly 20 percent of students receive financial support, or 120 pupils.

In 1440, Henry VI founded Eton College, which followed a similar structure to Winchester College. At Eton, 70 poor boys, or 'King's Scholars', were provided with accommodation and education for free. Also for children of limited financial means, Christ's Hospital School was set in motion by the young King Edward VI in 1552, with funds raised by the City of London. The pupils were cared for and prepared for future careers, with girls admitted from the beginning. Westminster School's origins can be traced to a charity school established by the Benedictine monks of Westminster Abbey. Interestingly, Merchant Taylors and Haberdashers borrow their names from merchant guilds, as members of the Merchant Taylors' Company and Haberdashers' Company founded the respective schools.

During the Reformation, schools were separated from the Church, no longer focusing on religion. For the aristocracy, private tuition was usual before the 16th century, but after this time, collective education began to be favoured. Many boarding schools became independent schools when they began to attract fee-paying upper-class and bourgeois students, particularly by the 18th century. This period saw an expansion in boarding schools as the Industrial Revolution led to increased affluence. Noble-born boys were educated at these institutions to become future commanders, politicians and military leaders. Meanwhile, girls were generally educated in a domestic environment up until the mid-19th century, when the first girls' boarding schools opened their doors. Cheltenham Ladies' College was founded in 1853, and Roedean School in 1885. The Education Act of 1880 made education obligatory for all children between the ages of five and ten, regardless of gender.

During the colonial expansion of the British Empire, the traditional British boarding school continued to advance and grow in popularity. In reaction to Britain's developing geographic and economic position in the world, children at boarding school began to be taught modern languages, military strategy, commerce, diplomacy and governance. British colonial governors and administrators and local elite in the colonial territories sent their children to boarding schools back in the UK so they would experience a British education. Locally-run British boarding schools were also set up across the colonial empire to disseminate British values and ideals.

(22) University College London

UCL is the first university to teach engineering, architecture, and language. It founded the first engineering laboratory in the world for the purpose. Its radical spirit is still strong as seen in its commitment to positive climate action. UCL students and researchers are working on complex contemporary issues such as global health, sustainable cities, human well-being, cultural understanding, transformational technology, justice, and equality.

The network of UCL alumni has expanded to more than 350,000 members across 190 countries worldwide. More than half of their 30 Nobel laureates are non-British. UCL's extensive network brings about bright career prospects for its graduates. According to the survey in Graduate Outcomes by the Higher Education Statistics Agency (HESA) in 2019, 62% of UCL graduates found full-time work within 15 months after graduation in a wide range of sectors ranging from financial services and consultancy to health and social care and the creative arts. The median starting salary is £31,000.

UCL alumni are world-class achievers. Since 1901, UCL staff and alumni have won at least one Nobel Prize each decade in various fields from Physics, Chemistry to Physiology and Medicine.

UCL is home to twelve world-leading faculties with top-tier programmes recognised by reputable education rankings internationally. Some of the top programmes are: Psychology and Language Sciences, Education Studies and Medicine MBBS.

Applicants taking A Levels are expected to present at least three full GCE A Levels for entry to undergraduate courses. There are also International Foundation Year courses which are intensive 1.5 or 2-semester programmes designed specifically to provide you with a pathway to undergraduate degree study at the university. In the UK, all university applications (including those submitted by international students) go through the Universities and Colleges Admissions Service, more commonly known as UCAS.

As for accommodation, UCL provides around 7000 beds in 26 halls of both catered and self-catered accommodation for their first-year students. All accommodation options are single rooms due to the COVID-19 pandemic. They are either en-suite or with shared bathrooms, ranging from £156 to £300 per week. At the catered accommodations, the rent includes breakfast and evening dinner on weekdays and brunch on Saturdays and Sundays. Students can also use a small kitchen to prepare meals. For self-catered accommodations, students may use the shared kitchen facilities to cook.

UCL provides Students with multiple Activities and Clubs. There are over 300 active societies at UCL and also cultural societies that welcome anyone with an interest in their

group. Career building societies are also available. Over 70 sports clubs are available at UCL; all go under the collective name of TeamUCL. Competitive participants can compete in the TeamUCL leagues for 11 aside football, six aside football, netball, and 3X3 basketball. There is no need to be a member of any club to play these sports. Serious players can also attend the Elite Athlete Programme and High-Performance Programme to train for national and international games.

(23) Cultures and national stereotypes

A nation is a group of people who share common history and usually a language and usually, but not always, live in the same area. Culture can be described as our everyday life: how we communicate, what makes us happy and sad. It also includes our language, religion, traditions, behavior, way of life – in other words, what we do each day. People that belong to various nations may differ and they always differ from one another.

For example, the Germans are regarded as scientifically-minded and industrious, they're always considered solid, intelligent and mathematical. And, for instance, the Israeli are believed to be mercenary, industrious, shrewd, loyal to family, religious. There is a big amount of examples we can list about national character of different people. Proving the difference of the national stereotypes I want to compare Russian and English nations. There are a lot of features that vary. The Russians are industrious, tough, brave, progressive and suspicious. They are always considered to be nationalistic, over - patriotic (because of this reason they're good soldiers), we are willing to respect opinion of other people.

Speaking about Englishmen, I may note that they're reserved, tradition-loving, courteous, honest, extremely nationalistic and etc. To my mind, they have a specific sense of humor. They say that they can't understand our jokes and anecdotes not only because of the different meanings of the words, but because of their humor is more delicate. Looking at these features of the Russians and the Englishmen it is not hard to mark out the differences. The Englishmen are reserved, but the Russians are open-hearted and communicative. The Englishmen are tradition-loving and the Russians, to my mind, don't keep their traditions in such a degree. There is a great majority of factors that influence the nations' stereotype and its people's character. People that live in the southern countries have fewer problems than those who live in the North and because of this they're more cheerful and artistic. The history also has a great influence on the national character. The peoples in Asia are revengeful

because their forefathers often were at war with others. In Africa many countries were colonies of Great Britain, Holland, Spain and so on and they (Africans) were the slaves and because of this they're still hard-working and industrious.

The National Character exists. It is not a myth, it's a reality. But the National Character doesn't describe the character of every person, it describes the character of a nation in general. Every person has its own character, but according to the person's belonging to some nation many traits of character are similar and these features may be explained as the national character.

(24) British Stereotypes

The English are one of the nations, for which people all across the world have created countless stereotypes and opinions involving their country, culture and character. This might be due to the wide-spread political power, which Britain used to exercise throughout the previous centuries, when the country boasted numerous colonies and conquests both on land and sea. But what are some of the most popular myths and stereotypes surrounding them to this day? Are these concepts true?

Perhaps the most popular stereotype about the British isles has to do with its notoriously bad weather. All over the world people are convinced that it rains constantly all across the country. The bad weather has turned into the trademark of England, but it's more a myth than reality. In fact, the climate in the region is soft and humid, because, even though the isles are located in the north, they benefit from the direct influence of the warm ocean current Gulfstream. Despite the weather being fickle and often rainy, it is not nearly as rainy as people seem to claim: the country lists only 46th in the world in rainfall, further back even than countries like New Zealand (29th) and the USA (25th). The belief about the English bad weather is most likely due to the cold winters, much longer than the summer on the isles.

While there is an element of truth in this particular English stereotype, it is not hard to understand why. British weather is not prone to remain unsurprising for any long period of time. In fact, it is often the case that the weather would change twice or thrice within a single day, with weather forecasts informing people by the hour, rather than by the day. That is why it is no strange occurrence to see an Englishman leaving his house on a bright sunny morning, tightly wrapped in a cloak and carrying an umbrella! The constantly changing weather conditions do provide people with a safe and varied source of small talk in order to avoid the much dreaded awkward silence in social encounters.

(25) Eton College – the factory of gentlemen

Eton College is one of the most famous schools in the world. It is a school for boys only. It's located in the small town of Eton, next to Windsor which is famous for Windsor Castle. Prince William and Prince Harry studied in Eton College.

Eton was founded by King Henry VI in 1440. The king was only 18 at that time. His aim was to give education to poor boys so that they could then go to Cambridge University. The chosen boys should "have a good character, be good at reading, Latin grammar and singing". If they "behaved badly, married, or became monks", they had to leave. The life in Eton was hard. Rats ran free about the college, boys had to get up at 5 o'clock in the morning and all lessons were in Latin.

Today, Eton is the largest, most prestigious and very expensive public school in Britain. To get into the college you have to pass entrance exams first. Many famous people studied in Eton: the novelists Henry Fielding, George Orwell, Aldous Huxley, Percy Shelley and Ian Fleming, 18 British prime ministers, Prince William and Prince Harry, David Cameron, Boris Johnson, the Mayor of London.

Eton is a boarding school where boys live and study away from home. Each boy has his own small room with a bed and desk. There are a number of important senior boys with responsibilities in the house. Eton students wear a strange old-fashioned school uniform. It consists of a black tailcoat, black pin-striped trousers, a black waistcoat, well-polished black shoes, a false-collar and a white tie. In the past Eton students also wore a top-hat and a walking-cane.

Teachers also wear a uniform, consisting of a white bow-tie, black jacket and striped trousers.

Eton gives a very good education. Every boy takes at least two modern languages chosen from French, German, Japanese, Russian and Spanish. Students also study Latin for at least one year and many choose to study Greek as well. Outside the main timetable they may choose Chinese or Arabic.

At college there are about fifty societies and clubs. Eton is famous for its theatre. Senior boys may take part in military training. Students can do 30 different sports including rugby, football, cricket, rowing, hockey, basketball, swimming and many others. A personal tutor looks after the progress of every boy. After Eton students usually go to top universities, such as Oxford or Cambridge.

Тексты социо-культурной направленности

(1) How Queen Victoria remade the British monarchy

Victoria was the product of a succession crisis in England's royal family that occurred when Princess Charlotte, the presumptive successor to King George, and her infant son died in childbirth. Charlotte's brothers—all of whom were single and had given the monarchy a bad name with their profligate spending and messy personal lives—raced to produce an heir. One of those brothers, Edward, hastily married a widowed German princess and became the first to produce an heir. Born in 1819, Alexandrina Victoria was a direct successor to the crown.

Palace intrigue made for a miserable childhood. Victoria's father died when she was a child, and her ambitious mother allied herself with the scheming Sir John Conroy, a member of the royal household who seized the chance to gain power and influence through the future queen. He created what became known as "the Kensington system," an elaborate set of rules that isolated the young princess at Kensington Palace and put him in control of her education and upbringing. Designed to keep Victoria dependent and loyal to Conroy and her mother, the system resulted in an unhappy childhood—and a growing sense of resentment.

Victoria broke free in 1837, when she turned 18 and rose to the throne. As soon as she became queen, she banned Conroy from her court and marginalized her mother. In 1840, she married her cousin Albert, a German prince. It was a genuine love match—she wrote that her wedding night was "bliss beyond belief"—and they went on to have nine children.

During her early reign, Victoria was heavily influenced by Lord Melbourne, the prime minister, and Albert, who was her closest political advisor and whom some historians believe was "king in all but name." Together, they pursued an agenda of modernization and stability in an era of political upheaval. The monarchy's reputation had been badly damaged by Victoria's predecessors, and the British populace clamored to replace the monarchy with a republic. And in Ireland, the potato famine between 1845 and 1852 fomented outright rebellion.

Together with her husband, Victoria faced those challenges head-on, working to strengthen the position of the monarchy in England and throughout Europe, where there was also a growing distaste for royals who expected the public to foot the bill for their lavish lifestyles. In contrast, Victoria expanded the monarch's public role, supporting charities, the arts, and civic reform to counter the view that British royalty wasn't worth the expense. As a result, the queen and her growing family became beloved celebrities and influenced popular culture, introducing England to everything from white wedding dresses to Christmas trees.

In 1861, tragedy struck when Albert died at 42. Victoria was devastated and went into deep mourning. She wore black for the rest of her life and withdrew from the public eye for years. The republican movement grew during her isolation, and she was criticized for her absence from public life.

Victoria resumed her public duties by the late 1860s. Her later reign was largely devoted to encouraging peace in Europe and expanding and consolidating her massive political empire. She became Empress of India in 1877 and influenced foreign relations closer to home through her children and grandchildren, many of whom married into European royalty.

At the beginning of her monarchy, Britain was seen largely as a trading power. But under Victoria, it became a mighty empire and the world's most powerful nation. Over the course of the 19th century, it grew by 10 million square miles and 400 million people. Those gains came at a tremendous price: England was almost constantly at war during Victoria's reign, and the colonialism practiced in her name involved brutal subjugation.

Though Victoria was popular, her subjects still pushed to reform the monarchy. Ultimately, this led to an erosion of the monarch's direct political power as ordinary British people gained the vote, the secret ballot, and other political reforms in the mid- to late 1800s.

(2) History of the Internet

From its very beginnings the Internet became a crucial part of each and any infrastructure. Similar to the discoveries of electricity, microorganisms or elementary particles, the creation of the Internet has turned a new page in the history of humanity.

The history of the Internet has begun in the middle of the 20th century as a result of rapid development of computer science. Computers of that age were still relatively underperforming and needed constant maintenance. Some kind of an effective and automated method of time-sharing between users needed to be devised and implemented for them to work reliably.

The first idea that had emerged from that necessity was a concept of multi-tasking. Nowadays we don't pay much attention to the fact that our computers perform many tasks at once, and that with our computers we can, for example, work and listen to music at the same time. But in the 1950s this idea turned out to be revolutionary.

The second idea would be a proposition to merge multiple computers into a single network. Each participant¹ of such a network would be able to exchange data with the others. But the exact mechanism of implementation was still largely a mystery. Roughly for ten years the scientists were developing and discarding all kinds of ideas, one after another, preserving those that could be at least somewhat handy bit by bit. This is how the prototypes of packet exchange protocols (as well as the concept of a data packet itself) came to be.

In 1969 a duo of American engineers, Robert Taylor and Lawrence Roberts, have made a presentation to the U. S. Department of Defence with a project dubbed² ARPANET (which stands for Advanced Research Projects Agency Network) founded on the previous research. Even more advanced networks have started to develop based on this one, including what would be later known as ‘networks of networks’. These researches have culminated with the emergence³ of two main network protocols (TCP and IP), which are still used as of today with some modifications.

A modern solution that eventually replaced ARPANET was called NSFNET, which was the National Science Foundation Network. This particular network has adopted the TCP/IP protocol as its main one, and also helped the emergence of the Domain Name System (DNS). And thus when the 1990s have arrived, the Internet architecture as we know it was largely in place.

One should make a distinction between terms ‘the Internet’ and ‘the World Wide Web’. The first one relates to the network architecture in itself. The second one is more of a modern development and constitutes an interface that allows the access to a network for a user. It emerged in 1990 courtesy of CERN scientists, Tim Berners-Lee in particular. He was the inventor of terms such as HTTP, HTML, and also of a web browser.

In 2020 nearly 4,5 billion people are using the Internet both for work and communication. The Internet is a cornerstone of all modern banking, of the vital infrastructure automated systems, and also of many computer science branches. This promising technology still continues its development nowadays, and for now we can’t even fathom⁵ what new discoveries this further development can bring.

(3) The Bayeux Tapestry

The Bayeux Tapestry (also known in France as a Tapestry of Queen Matilda) is a unique medieval artifact that dates back to the 11th century. Nearly 70 metres of embroidered cloth expand on the events that led up to the Norman conquest of England, culminating with the fateful Battle of Hastings.

Technically not a tapestry (as tapestries are woven, not embroidered), this exquisite piece of cloth shows about 70 historical scenes and is narrated with Latin tituli. It’s origins

and the history of creation are still hotly debated in scholarly circles, but the two main theories give the credit either to the Queen Matilda of Flanders who was a wife of William the Conqueror, or to a bishop Odo of Bayeux, who was William's half-brother and eventually became a regent of England in his absence.

The tapestry is made largely of plain weave linen and embroidered with wool yarn. The woolen crewelwork⁴ is made in various shades of brown, blue and green, mainly terracotta, russet, and olive green. Later restorations have also added some brighter colours, such as orange and light yellow. Attempts at restoration of both the beginning and the end of the tapestry were made at some points, adding some missing tituli and numerals, although an ongoing debate disputes the validity of these restorations.

The events unfolding on a tapestry took place in the years 1064 to 1066. Anglo-Saxon earl Harold Godwinson is depicted receiving the English crown from Edward the Confessor, a deathly ill English monarch. An invading Norman force is then shown, which soon engages Saxon forces in a bloody battle. Ultimately king Harold is slain, and English forces flee the battlefield. The last part of the tapestry was supposedly lost and a newer piece was added in its place roughly in 1810.

The tapestry allows for an unique insight into the mind of a medieval craftsman, and, as it was commissioned by victorious Normans, gives us a chance to see how the medieval history was customarily chronicled by the winning side.

Since 1945 the Tapestry rests in Bayeux Museum, although as recently as 2018 the plans were put in motion to move it to an exhibit of the British Museum in London before the end of 2022. If everything proceeds as planned, it will be the first time the Tapestry has left France in over 950 years.

(4) John Reed's biography (by Albert Rhys Williams)

Born in Portland, Oregon, on October 22, 1887, John Reed took after his father, who was a fighter by nature. After leaving school, John Reed went to Harvard, America's most famous university. Having taken his degree, John Reed entered the wide world outside the walls of the university. Soon he was in great demand as a writer of articles, stories, poems and plays, which were published in all the leading journals and magazines. As a journalist he travelled widely over the United States, and the experience he gained during these trips brought him

closer to the workers. He got to know their life very well and took an active part in their struggle. In the town of Paterson, a strike of textile workers turned into a revolutionary storm — and John Reed was among the strikers. In the State of Colorado, an agricultural area of the United States, he joined the Negroes who rose against racial discrimination. When World War I broke out, John Reed travelled to the battle fronts in France, Germany, Turkey, Italy and in Russia, too, and everywhere he went, he continued fighting for justice in spite of the danger to himself.

From the battlefields of Europe he returned to the United States not with fine words about the cruelty at the front, but exposing the war as a whole, a war unleashed by the imperialists to increase their profits at the expense of the people. For the anti-war information that he spread he was brought before a New York court. In court he said openly that it was his duty to fight for the revolution. His speech exposing the war impressed everybody. John Reed was found not guilty. In the summer of 1917, John Reed went to Russia, and during his stay there he realized that the victory of the Russian working class was approaching. When the fight began, John Reed was there with the revolutionary workers of Petro-grad in the Smolny, attending meetings at which Lenin spoke. Having returned to the United States in 1918, he organized the Communist Workers' Party, which later became the Communist Party of the USA. He was arrested many times for his revolutionary work. John Reed was a revolutionary long before he saw the events in the Palace Square in Petrograd, but his experiences there made him a scientific revolutionary. He studied the works of Marx, Engels and Lenin, which gave him an understanding of historical events leading to revolution. The Russian Revolution showed him the way forward, to the organization of the Communist Party in the United States, and to his work in the Communist International.

In 1920 he travelled to the Caucasus, where he took part in the Congress of the Workers of the East. There he caught typhus and died on October 17, 1920. He was buried near the Kremlin Wall with other fighters for the revolution.

(5)The White House

For more than 200 years, the White House has been known as the symbol of the President's administration, and of the United States.

The history of the White House began when President George Washington signed an Act of Congress in December of 1790 which declared that the federal government would live in a district "not exceeding ten miles square on the river Potomac." The creation of the new American capital began. Later it was named Washington after the first American President.

George Washington, together with the city planner Pierre L'Enfant, chose the place for the new president's home. A competition was held to find an architect to design the President's House. Nine proposals were handed in, and architect James Hoban won the competition. He proposed to build an impressive three-storey house.

The construction began in October of 1792. Although President Washington watched over the construction of the house, he never lived in it. Originally the White House was grey and was called the Presidential Palace. In 1800, when it was nearly completed, its first residents, President John Adams and his wife moved in. Ever since, each President of the United States has lived in this residence.

The Presidential Palace was seriously damaged in the great fire of 1814. The British invaded Washington and burned many buildings. After the war James Hoban, the original architect, partially rebuilt the President's home. To cover the marks of the fire, the building was painted white. At various times in history, the building has been known as the President's Palace, the President's House, and the Executive Mansion. President Theodore Roosevelt officially gave it the name of the White House in 1901.

The White House is the president's private home and each president has made his own changes and additions in it. At first the president's office was located in the living area, on the second floor of the White House. When Theodore Roosevelt brought his large family to the White House in 1901, he felt that his office and his home should be completely separated. Two wings were added to the first floor of the building: the East Wing and the West Wing. The President's Office was moved into the West Wing and was called the Oval Office.

In 1805 President Thomas Jefferson opened the house for public tours. However, since September 11, 2001 the public tours have been prohibited.

There are 132 rooms in the residence now. For recreation, the White House has a variety of facilities available to its residents, including a tennis court, a jogging track, a swimming pool, a movie theatre, and a bowling alley.

The garden around the White House was first planted by John Adams, the first resident of the White house. Later it was redesigned by many presidents and their first ladies. The part of the garden outside the Oval Office is used now as a place for official ceremonies.

(6) Cultures and national stereotypes

A nation is a group of people who share common history and usually a language and usually, but not always, live in the same area. Culture can be described as our everyday life: how we communicate, what makes us happy and said. It also includes our language, religion, traditions, behavior, way of life – in other words, what we do each day. People that belong to various nations may differ and they always differ from one another.

For example, the Germans are regarded as scientifically-minded and industrious, they're always considered solid, intelligent and mathematical. And, for instance, the Israeli are believed to be mercenary, industrious, shrewd, loyal to family, religious. There is a big amount of examples we can list about national character of different people. Proving the difference of the national stereotypes I want to compare Russian and English nations. There are a lot of features that vary. The Russians are industrious, tough, brave, progressive and suspicious. They are always considered to be nationalistic, over - patriotic (because of this reason they're good soldiers), we are willing to respect opinion of other people.

Speaking about Englishmen, I may note that they're reserved, tradition-loving, courteous, honest, extremely nationalistic and etc. To my mind, they have a specific sense of humor. They say that they can't understand our jokes and anecdotes not only because of the different meanings of the words, but because of their humor is more delicate. Looking at these features of the Russians and the Englishmen it is not hard to mark out the differences. The Englishmen are reserved, but the Russians are open-hearted and communicative. The Englishmen are tradition-loving and the Russians, to my mind, don't keep their traditions in such a degree. There is a great majority of factors that influence the nations' stereotype and its people's character. People that live in the southern countries have fewer problems than those who live in the North and because of this they're more cheerful and artistic. The history also has a great influence on the national character. The peoples in Asia are revengeful because their forefathers often were at war with others. In Africa many countries were colonies of Great Britain, Holland, Spain and so on and they (Africans) were the slaves and

because of this they're still hard-working and industrious. The National Character exists. It is not a myth, it's a reality. But the National Character doesn't describe the character of every person, it describes the character of a nation in general. Every person has its own character, but according to the person's belonging to some nation many traits of character are similar and these features may be explained as the national character.

(7) The Klondike Gold Rush

In late summer, 1896, a family of weary prospectors¹ was traveling through the inhospitable lands of Yukon, Canada. The region was famous for its harsh climate, poor infrastructure and very little else. Few rapidly decaying towns dotted the landscape, their inhabitants making a living not from prospecting, but rather from trading skins and furs with indigenous³ tribes.

The family has stopped to rest on a bank of a small creek, a tributary of Klondike River. As they were setting up a camp, they took a notice of a shiny rock glittering in the water. Exploring up and down the river revealed at least four large veins of gold, which George Carmack, the lead prospector, has claimed to himself and his family.

Next morning he had registered his claims⁵ at the police station, and the news spread with locals like a wildfire. The first discovery soon led to another, even larger vein. As it was a dead of winter by then, it went largely unnoticed by authorities and mainland prospectors. Locals, in turn, encouraged by stories about golden rivers and emboldened⁶ by the notion that native tribes saw no value in gold, went through extreme hardships to claim the best mining spots.

On July 15, 1897, two ships returned from Yukon to Seattle, bringing Klondike prospectors along with more than a 1,000,000\$ (which, accounting for the inflation, roughly equals 1,000,000,000\$ in 2020) of worth in gold. The story has caught the attention of the press, and soon almost 100,000 explorers stampeded⁷ to Klondike, eager to repeat the successes of the first prospectors. Most of these people had no experience in mining whatsoever, and many of them were unemployed earlier. Even if they didn't want to go, they couldn't just let the others have all the fame and riches. As the competition grew, the would-be-prospectors started to trade in claims instead of mining for actual gold. To accommodate a

rush of explorers, Seattle was transformed into a major transport hub, which it still remains nowadays.

Getting to Klondike was an adventure in itself. Richer people could sail all the way to their destination, albeit the ticket price has risen a hundredfold over the course of the 3-year long rush. Travelling by land implied carrying over a ton of supplies to last through the year, bringing pack animals⁸, dogs, sleds and hiring various specialists that knew the land and would be able to care about animals.

Of 100,000 prospectors that answered the call of gold, only about 40,000 have actually reached Klondike, and only about 4000 of those became rich. By the time the vast majority of people had arrived into Dawson City, the last outpost of civilization near the mines, all of the major claims were mined out, and the remaining ones required some major investment to explore and gave a little guarantee of success. In 1898 first of the disillusioned (and often ruined) prospectors started to return home, and by 1899 the legend of fabulous Klondike died out as swiftly as it had begun mere three years before that.

(8) Places of Interest in Great Britain

Great Britain is rich in world-famous places. Certainly among them there are famous university cities Oxford and Cambridge, Shakespeare's birthplace — Stratford-upon-Avon, towns of Cardiff, Edinburgh, Glasgow.

(1) Stratford-upon-Avon is a small town with the population about 20 thousand. It is 94 miles northwest of London. Its chief points of interest are associated with the name and life of Shakespeare. In Henley Street stands a one-storeyed wooden house, where the greatest English poet and playwright was born. Now, this house belongs to the British government.

When Shakespeare won the recognition of his contemporaries and became wealthy, he bought New Place, one of the largest houses in Stratford. It was in 1597 but he continued to live and work in London until 1610. Shakespeare died at the age of fifty-two in 1616 at New Place. But in 1759 the house where he died was torn down. Shakespeare was buried in the church at Stratford on the banks of the Avon.

The Royal Shakespeare Theatre was opened in Stratford in 1932. Only Shakespeare's plays are performed here. The plays staged in this theatre attract people from all over the world. Every year on the 23d of April people from all over the world come to Stratford to

take part in celebrating Shakespeare's birthday.

(2) Those who come to Oxford certainly are interested in its university most of all. It was founded in the 12th century. But there is no "university" as such in Oxford. The component parts of the University of Oxford are the colleges. Each college is practically autonomous, with its own set of rules of government. But not only this makes Oxford so different from the universities in other countries. Oxford has a "golden heart" — an area of less than half a square mile in which various historic buildings may be found. But they do not stand in isolation; they are mixed together with houses, shops and offices.

(3) Cardiff is the capital of Wales and its chief port. Cardiff is also a tourist centre. There are some places of interest there: the Castle, National Museum of Wales, New Theatre, Welsh Folk Museum. The Welsh people love singing. That's why Wales is sometimes called "the land of song". One of the Welsh traditions is festivals. Song festivals are very popular and usually gather a lot of people.

(4) Edinburgh is a city where the historic past lives side by side with the present. The first thing one can see is a very large hill in the middle of Edinburgh — the Rock. Edinburgh Castle stands on the Rock. It is the most famous building in the city. Edinburgh is famous for many things: its art galleries, museums, libraries. But it is especially famous for its festivals. In summer there is the Edinburgh 54 Festival. This is Britain's biggest arts festival. The city gets thousands of visitors during the festival period and every theatre, church and school hall is used for drama, music, film or opera. Besides the official festival there is also an unofficial festival. Here the artists are amateurs. Now, the unofficial festival is even bigger and more popular than the official one.

The best-known monument in Edinburgh is the Walter Scott Monument. The famous English writer of historic novels lived and worked here. The monument is in the form of a Gothic spire 200 feet high with a statue of Sir Walter Scott inside this beautiful structure. In the niches of the monument there are 64 statuettes of well-known characters from Scott's novels and poems.

(5) There is a prehistoric monument in Great Britain which is as interesting to the tourists as the Egyptian pyramids. This is Stonehenge. Stones stand here in circles or are arranged into a horseshoe shape. A great many theories have been advanced but exactly why it was built remains a mystery.

(9) Londinium: Ancient Roman Outpost That Became Powerful City Of London

The Romans established Londinium on the current site of the City of London around 43 AD. The first *definite mention* of the city refers to the year 60 AD and occurs in the writings of the Roman historian and senator, Tacitus, who wrote of a celebrated center of commerce filled with traders.

By the reign of Hadrian, Britannia was a fully developed province of the Roman Empire. One of the Roman outposts was Londinium, which eventually transformed into one of the world's most famous modern cities - London.

At the beginning, Londinium was just a small military outpost occupying rather small area of 1.4 km² (0.5 sq mi), but the city grew rapidly. By the turn of the century, Londinium had grown to about 60,000 people. Its access to the River Thames and the North Sea, contributed also to the city's importance and turned it to a thriving and influential provincial capital and major port. Londinium was not only the center of commerce but also the seat of government. By the 2nd century AD., Londinium was a large Roman city, with tens of thousands of inhabitants. Richer and noble people's homes had wall paintings and mosaic floors; many lived in villas, palaces. They had to their disposal temples, large forum and baths. Ordinary people lived in small houses with front doors and workshops behind. Soldiers lived in the fort, outside the main part of the town. The city was equipped with massive defenses: several forts were built along with the immense London Wall, remains of which are still recognizable in the city. The Romans also built heavy defenses for the city, constructing several forts and the massive London Wall, approximately 14.5 feet thick and at least 20 feet high.

Parts of this construction are still visible across the city today. Londinium's well-built roads linked it with several other, smaller cities and continued all the way to the borders of Britannia. The countryside's landscape dotted with well-developed farms, surrounded Londinium.

Around 350, a series of 22 solid, semi-circular towers were additionally constructed and these functioned as bases for *ballistae*, (an ancient form of large crossbow used to propel a spear). During the Roman times, several similar town and city walls were constructed by the Romans in England and Wales and their remains survived until now.

Londinium had been a Roman foundation and for almost four centuries it had its importance; later, the great city began to wither and trade, which was so important for the city, broke down.

According to many researchers, Londinium had always been much more Roman than British and in the 5th century, still many rich Roman families lived in Londinium. Archaeological excavations revealed their remains in form of large hidden hoards of Roman coins and diverse household remains.

The Romans had been troubled by serious barbarian raids since around 360 AD. The Irish, Scottish and Saxons from Germany all came to plunder the wealth of Roman Britain. The Roman legions began to withdraw from Britain in 383 AD to secure the Empire's borders in other places of Europe.

In 410 AD, Emperor Honorius finally had refused to send support to the British Romans and all Roman troops had been withdrawn, leaving the cities of Britain and the remaining Romano-British for themselves.

The Roman Empire's conquest of Britain finally ended and a new period of time known as the Dark Ages began.

(10) Lord Speaker

The office of Lord Speaker was created under the Constitutional Reform Act 2005 when the historical roles of the Lord Chancellor were re-distributed and reformed.

The Lord Speaker chairs daily business in the House of Lords chamber and is an ambassador for the work of the House. To date, there have been two Lord Speakers.

The House of Lords is self-regulating, meaning that it has never delegated its power to regulate its own proceedings to any other authority.

The Lord Speaker has no power to call Members to order, to decide who speaks next, or to select amendments. In practice this means that the preservation of order and the maintenance of the rules of debate are the responsibility of the House itself, that is, of all the Members who are present, and any Member may draw attention to breaches of order or failures to observe customs.

However, the Lord Speaker does 'collect the voices' and calls for votes when necessary. 'Collect the voices' is the term for the process whereby the Lord Speaker puts a

motion or amendment to a vote at the end of the debate, and tries to judge by the volume of voices which side has the most support.

At the start of each sitting, the Lord Speaker processes into the Chamber and presides over proceedings from the Woolsack, the large square cushion of wool covered in red cloth at the centre of the Lords' Chamber. It is stuffed with wool brought from around the Commonwealth.

The tradition of the Woolsack dates back to the reign of Edward III when the wool trade was one of the most important parts of the economy, and so the seat is a traditional symbol of the wealth of the country.

The Lord Speaker has many roles including ceremonial, ambassadorial and outreach. In addition to the presiding officer role, the Lord Speaker has ceremonial duties within the House, for example, at the State Opening of Parliament, and when visiting Heads of State address the Houses of Parliament.

She also has an ambassadorial role receiving and visiting speakers of overseas parliaments and participating in speakers' conferences. The incumbent also chairs the House Committee, the main supervisory body for the House of Lords Administration, with responsibility for financial matters.

The Lord Speaker conducts outreach activities to engage the public in the work of the Lords, including the Peers in Schools programme which is aimed at young people.

The Lord Speaker is elected by Members of the House of Lords for a period of five years, renewable once. The first election took place on 4 July 2006 when Baroness Hayman took office. Baroness D'Souza is the current Lord Speaker. She was elected in July 2011.

Upon election, the successful Lord becomes unaffiliated from any party or group within the House and is not expected to vote, even in the event of a tie (as the House of Lords has rules set out for resolving an equality of votes).

Deputy Speakers assist the Lord Speaker and also sit on the Woolsack in the Lord Speaker's absence. They are all Members of the Lords and may continue to engage in party politics while serving as deputies.

(11) The Great Fire of London

The Great Fire of London raged for four days in 1666, destroying much of the city and leaving some 100,000 people homeless. As the Museum of London prepares to mark the

350th anniversary of the inferno, BBC News looks at how it left a lasting impact on the capital.

When a fire began in Thomas Farriner's bakery in London's Pudding Lane in the early hours of 2 September, no-one could have foreseen the damage it would cause.

In a city where open flames were used for heat and light, fires were common. In fact, when Lord Mayor Sir Thomas Bloodworth saw the flames, he was so unconcerned he went back to bed.

But the fire spread quickly - a combination of a strong wind, closely built properties and a warm summer which had dried out the wood and thatch used to construct homes meaning an area mile and a half wide along the River Thames was almost completely destroyed. But with that came the chance to rebuild the city.

A royal proclamation put a stop to construction until new regulations had been ushered in. The 1667 Rebuilding Act aimed to eradicate risks which had helped the fire take hold, including restrictions on upper floors of houses no longer being permitted to jut out over the floor below. Importantly, building materials also changed. The 1667 act stated: "No man whatsoever shall presume to erect any house or building, whether great or small, but of brick or stone." Anyone found to be flouting the new rules would be punished by having their house pulled down. Not only were houses made of wood in 1666, but so were water pipes, and much of the water supply infrastructure was destroyed. There were no access points to get to the water without stopping the flow, and in the panic to try and extinguish the fire the pipes were broken and the water drained away. Steps were taken to rectify this and make the water easier to access - essentially the beginnings of a fire hydrant system.

(12) History of Welsh Love Spoons

Welsh lovespoons are hand-made wooden spoons that are made from one piece of wood and designed and decorated according to the carver's imagination.

Originally made by young men during the long winter nights or by young men on long sea voyages, they were carved to express that young man's intentions towards a particular girl. A love spoon would be given to a girl as an indication that he wished to court her. A girl may have received lovespoons from several suitors and these would be displayed on the wall of her home.

The tradition of carving lovespoons is thought to have been derived from the making of culinary spoons and the giving of a spoon became symbolic with the expression of the wish to “feed” or support the object of the prospective suitor’s desire. It was a short step to decorating such a spoon and to investing it with symbols of the suitor’s hopes and wishes. Such a spoon would then have had no practical use and would have been regarded as an ornamental gift albeit vested with meaning.

The earliest surviving lovespoon dating from around 1667 is at the National Museum of Wales at St. Fagans near Cardiff but Welsh lovespoons are known to have been made by the menfolk of Wales before this date.

The practice of making and giving lovespoons by prospective suitors was common in Wales throughout the 17th, 18th and 19th centuries but the custom became less popular towards the end of the 19th century and the beginning of the 20th. There has been a revival of the custom over the last 40 or so years and many people today make love spoons on a commercial basis for customers to utilise for the commemoration of special events in their lives or in the lives of their loved ones.

Today Welsh lovespoons may be given as they were originally, to declare a suitor’s intent, to commemorate a Wedding Day, an Engagement, the birth of a child, a wedding anniversary, a birthday, a Christening or Baptism, Valentine’s Day or the Welsh equivalent, Dydd Santes Dwynwen, a graduation and as “favours” for the guests at a wedding.

Wood carvers have traditionally used a variety of timbers for their work; the timber chosen being most suited to the item being fashioned. Lovespoons have been made from timbers most readily available and from those that are easily worked; softwoods such as sycamore and lime.

(13) Black Friday and Buy Nothing Day

Every year in November, people look for bargains on Black Friday. But did you know that the same day is also Buy Nothing Day?

Black Friday is the day after the American holiday of Thanksgiving, which is celebrated on the fourth Thursday of November. Because it is a holiday in the United States, it has long been a popular day for consumers to start shopping for Christmas. Over the last 20 years big retailers have started to offer discounts and bargains on this day, and it has become more and more popular. Last year, people in the USA spent an estimated \$54.7 billion

between Black Friday and Cyber Monday (the Monday after Thanksgiving, when people often buy more online). The idea of Black Friday has also spread around the world. For example, in 2017, people in the UK spent the equivalent of \$10.3 billion, in Germany \$7.6 billion and in France \$6.2 billion.

Many of us love to get a bargain, but some feel that events like Black Friday encourage people to buy things that they don't really need and can't afford. Many people seem to completely lose control of both their spending and their tempers. It is easy to find video online of customers physically fighting each other over bargains. It is also argued that Black Friday is bad for small shopkeepers, who cannot afford to offer the kinds of price cuts that the big companies can.

Instead of taking the opportunity to buy as much as possible on Black Friday, you could do the opposite and buy absolutely nothing. Since 1997, Buy Nothing Day has been held on the same day as Black Friday. The rules are simple. Just don't buy anything at all for 24 hours. Many people are surprised how difficult this actually is. The aim is to make people think more about their spending and to make better decisions about what they buy and where they buy it from.

As well as spending less and not buying unnecessary items, Buy Nothing Day aims to raise awareness of how to be a more ethical consumer. For example, you can avoid buying 'fast fashion', that is, very cheap clothes that are worn a few times before being thrown away. Or you could decide not to automatically upgrade your mobile at the end of a contract. These kinds of decisions can help to protect the environment as well as saving you money.

Some people carry out protests at shopping centres. Others avoid the shops completely and go for a walk in nature instead. Another alternative, the Buy Nothing Coat Exchange, is an idea which is spreading. People donate winter coats throughout November and anyone who needs one can come and take one on Buy Nothing Day.

(14) Received Pronunciation

Various referred to as the 'Queen's English', 'BBC English' or 'Oxford English', Received Pronunciation, or RP for short, is the accent usually described as typically British. Find out more about its origins and its current status in the UK.

Received Pronunciation, or **RP** for short, is the instantly recognisable accent often described as 'typically British'. Popular terms for this accent, such as 'the Queen's English', 'Oxford English' or 'BBC English' are all a little misleading. The Queen, for instance, speaks

an almost unique form of English, while the English we hear at Oxford University or on the BBC is no longer restricted to one type of accent. RP is an **accent**, not a **dialect**, since all RP speakers speak Standard English. In other words, they avoid non-standard grammatical constructions and localised vocabulary characteristic of regional dialects. RP is also regionally non-specific, that is it does not contain any clues about a speaker's geographic background. But it does reveal a great deal about their social and/or educational background.

RP is probably the most widely studied and most frequently described variety of spoken English in the world, yet recent estimates suggest only 3% of the UK population speak it. It has a negligible presence in Scotland and Northern Ireland and is arguably losing its prestige status in Wales. It should properly, therefore, be described as an English, rather than a British accent. As well as being a living accent, RP is also a theoretical linguistic concept. It is the accent on which phonemic transcriptions in dictionaries are based, and it is widely used (in competition with **General American**) for teaching English as a foreign language. RP is included here as a useful reference, not to imply it has greater merit than any other English accent, but because it provides us with an extremely familiar model against which comparisons with other accents may be made.

A speaker who uses numerous very localised pronunciations is often described as having a 'broad' or 'strong' regional accent, while terms such as 'mild' or 'soft' are applied to speakers whose speech patterns are only subtly different from RP speakers. So, we might describe one speaker as having a broad Glaswegian accent and another as having a mild Scottish accent. Such terms are inadequate when applied to Received Pronunciation, although as with any variety of English, RP encompasses a wide variety of speakers and should not be confused with the notion of 'posh' speech. The various forms of RP can be roughly divided into three categories. **Conservative RP** refers to a very traditional variety particularly associated with older speakers and the aristocracy. **Mainstream RP** describes an accent that we might consider extremely neutral in terms of signals regarding age, occupation or lifestyle of the speaker. **Contemporary RP** refers to speakers using features typical of younger RP speakers. All, however, are united by the fact they do not use any pronunciation patterns that allow us to make assumptions about where they are from in the UK.

(15) The Political System (The UK)

The United Kingdom is a constitutional (or parliamentary) monarchy, without a written constitution. The British constitution is based on Acts of Parliament (also called "laws" or "statutes") and "conventions", which are commonly accepted assumptions about the way things should be done.

The British Constitution provides for three branches of power: Parliament, which makes laws, the government, which 'executes' laws, i.e. puts them into effect, and the law courts, which interpret laws.

The country has a monarch (a king or a queen) as its Head of State. The monarch has very little power and can only reign with the support of Parliament, which consists of 'two chambers known as the House of Lords and the House of Commons.

Parliament and the monarch have different roles in the government of the country, and they only meet together on symbolic occasions such as the coronation of a new monarch or the opening of Parliament.

In reality, the House of Commons is the only one of the three which has true power. It is here that new bills are introduced and debated. If the majority of the members are in favour of a bill, it goes to the House of Lords to be debated and finally to the monarch to be signed. Only then does it become law. Although a bill must be supported by all three bodies, the House of Lords only has limited powers, and the monarch has not refused to sign one since the modern political system began over 200 years ago.

The Monarch. The Queen has a certain role in state affairs, not only through her ceremonial functions, such as opening Parliament, but also because she meets the Prime Minister every week and receives copies of all Cabinet papers.

Functions of the Sovereign are as follows:

- opening and closing Parliament;
- approving of the appointment of the Prime Minister;
- giving her Royal Assent to bills;
- giving honours such as peerages, knighthoods and medals;
- Head of the Commonwealth;
- Head of the Church of England;
- Commander-in-Chief of the armed Forces.

The powers of the monarch are not defined precisely, however. Theoretically every act of government is done in the Queen's name. Every letter sent out by a government department is marked "On Her Majesty's Service" and she appoints all the Ministers, including the Prime Minister. In reality, everything is done on the advice of the elected Government, and the Monarch takes no part in the decision-making process.

(16) The Oxford English Dictionary

The first volume of the Oxford English Dictionary (OED) was published in February of 1884 and covered from "A" to "Ant". In the first seven years of work, the editors didn't get past the letter "b". The dictionary's ambitious intention was to record every word used in English since 1150 and trace it back through all its shifting meanings, spellings and uses to its earliest recorded appearance, plus at least one citation for each century of its existence. In the end, it became twenty ponderous volumes long, with 615,000 entries; 2,412,000 supporting quotations, and 60,000,000 words.

The Oxford English Dictionary was the first modern English dictionary ever made and it set a new standard for what dictionaries would be from then on. To this date, it is considered "the ultimate authority on the usage and meaning of English words and phrases, unparalleled in its accuracy and comprehensiveness".

According to the publishers, it would take a single person 120 years to 'key in' the text to convert the 59 million words in the second edition of OED into machine readable format, followed by 60 years of proofreading and requiring 540 megabytes of electronic storage space.

One of the thousands of contributors of the OED was Fritzeward Hall, who spoke nine languages and "wrote every single day ... with sheet after sheet of proofs, corrected, changed, closely read and carefully parsed."

William Chester Minor was also a prolific contributor. He was a retired United States Army surgeon and was, at the time of his contribution, imprisoned in the Broadmoor Criminal Lunatic Asylum. His story was told in book *The Surgeon of Crowthorne: A Tale of Murder, Madness and the Love of Words*, written by Simon Winchester, first published in

England in 1998 and then retitled *The Professor and the Madman: A Tale of Murder, Insanity, and the Making of the Oxford English Dictionary* in the United States and Canada (the 'professor' of the American title is James Murray).

Author J.R.R. Tolkien worked on the making OED. He was employed in 1919 and concentrated mostly on letter "W" (warm, wasp, water, wick, wallop, waggle, winter). He said that during the time he worked on the OED, he learned more "than (at) any other equal period of my life."

According to book "The Meaning of Everything - The Story of the Oxford English Dictionary", also by Simon Winchester, to Murray the hardest word was "set". "Black" was also a difficult one, taking one assistant three months to work out. The very last word in the 1928 edition was **zyxt**: a Kentish word, past participle of the verb to see.

(17) Constitutional history of the United States

The United States of America consists of fifty states, one federal district and several territories. Forty-eight contiguous states sit between Mexico to the south and Canada to the north. Alaska, the forty-ninth state, is located to the west of Canada, and Hawaii, the fiftieth, is an island located in the Pacific Ocean.

Initially, the country was made up of a loose group of British colonies that had developed along the eastern shore of present day USA. The original thirteen colonies were New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia. British rule within the colonies increased following the end of a six year war between Britain and the French in the northern territories. Relations between the colonies and Britain soon soured over lack of representation within the British Parliament and the increased taxation to pay for the war. The American Revolutionary War began in 1775. On July 4, 1776 the colonists adopted a Declaration of Independence from Britain. The short document had many innovations, such as the declaration that all men are created equal and that the people have the right to choose their governments. Needing a framework for a federal government to govern the thirteen independent states, the Second Continental Congress appointed a thirteen member committee to prepare a draft constitution. After a year of debates, the Articles of Confederation were completed on November 15, 1777, with the last state signing on November 20, 1778. However, because they vested almost all power in the states and gave very little authority to the federal government, the Articles soon

led to confusion and infighting among the states, especially once the Revolutionary War ended in 1783.

Recognizing the need for a new system, a constitutional convention was organized to revise the Articles in May 1787. It was attended by delegates from the different states, drawn from all sectors of society. Despite its limited mandate to only revise the Articles of the Confederation, delegates decided to adopt a completely new instrument of government. Following further debates, the instrument was finally submitted to the states for ratification as a new Constitution in September 1787. One year later, in September 1788, the new Constitution came into effect.

A very short document consisting of seven articles, the Constitution was designed to set up a federal government of limited power and to protect the rights of the states. Articles I-III focus on the power and authority belonging to the three branches of the federal government: the Legislature, the Executive, and the Judiciary. Article IV addresses the relationship among the several states. Article V establishes the guidelines for amending the Constitution. Article VI declares the Constitution as the supreme law of the land, and Article VII describes the process of ratification. The Constitution, as ratified, did not provide for protection of civil liberties. These were established through the Constitution's first ten Amendments, known as the Bill of Rights, in 1789. These amendments limit the federal government's abilities to restrain or dictate the behavior of the individual.

Including the Bill of Rights, the Constitution has been amended twenty-seven times. The 17 additional amendments have addressed several issues, including criminalizing slavery, introducing female suffrage, and ensuring the protection of voting rights. The most recent amendment, in 1992, established that any law changing the compensation of members of Congress would not take effect until after a new Congressional election had been held.

(18) The Three Major Powers (US Constitution)

The Separation of Powers devised by the framers of the Constitution was designed to do one primary thing: to prevent the majority from ruling with an iron fist. Based on their experience, the framers shied away from giving any branch of the new government too much power. The separation of powers provides a system of shared power known as Checks and Balances.

Three branches are created in the Constitution. The Legislative, composed of the House and Senate, is set up in Article 1. The Executive, composed of the President, Vice-President, and the Departments, is set up in Article 2. The Judicial, composed of the federal

courts and the Supreme Court, is set up in Article 3. Each of these branches has certain powers, and each of these powers is limited, or checked, by another branch.

The executive power is vested in the President, who serves a four-year term, renewable once. To qualify for the Presidency, an individual must be a natural born US citizen who has been a resident of the United States for at least fourteen years and is at least thirty-five years old. The President is the Head-of -State, Head-of-Government, and Commander-in-Chief of the Armed Forces. The President receives foreign diplomats and, with the consent of the Senate, makes treaties.

All **legislative power**, both enumerated and implied, granted to the federal government vest in the Congress comprised of the House of Representatives and the Senate. Representatives must be at least twenty-five years old, be a citizen of the United States for seven years, and live in the district they represent. Senators must be at least 30 years old, be a citizen for nine years, and live in the state they represent. Representatives are directly elected for a two-year term, while Senators serve six. The Vice President serves as the President of the Senate. An overturn of a President's veto requires a two-third majority from both Houses. Article I, Section 8 enumerates the legislative powers, which include: To make all laws which shall be necessary and proper for carrying into execution the foregoing powers, to provide for the common welfare, to provide for and maintain the armed forces, to borrow money and to declare war. The Constitution also gives Congress the power to regulate foreign and interstate commerce.

The Constitution vests **the judicial power** of the United States in the Supreme Court and any other inferior courts that may be created. In all cases affecting ambassadors, other public ministers and consuls, and those in which a state is a party, the Supreme Court has original jurisdiction. In all the other cases before mentioned, the Supreme Court has appellate jurisdiction, both as to law and fact, with such exceptions, and under such regulations as the Congress shall make. Because the Court has jurisdiction over issues arising under the Constitution, it has the power of judicial review. The court can decide whether the actions taken by the states, the executive, or the legislature are constitutional. Supreme Court Justices are nominated by the President and confirmed by a majority of the Senate. Justices have a life tenure, unless he or she retires or is impeached.

(19) The reign of Henry VIII - The English Reformation

The English Reformation started in the reign of Henry VIII. The English Reformation was to have far reaching consequences in Tudor England. Henry VIII decided to rid himself

of his first wife, Catherine of Aragon, after she had failed to produce a male heir to the throne. He had already decided who his next wife would be – Anne Boleyn. By 1527, Catherine was considered too old to have any more children.

However, a divorce was not a simple issue. In fact, it was a very complicated one. Henry VIII was a Roman Catholic and the head of this church was the pope based in Rome.

The Roman Catholic faith believed in marriage for life. It did not recognise, let alone support, divorce. Those who were widowed were free to re-marry; this was an entirely different issue. But husbands could not simply decide that their marriage was not working, divorce their wife and re-marry. The Roman Catholic Church simply did not allow it.

This put Henry VIII in a difficult position. If he went ahead and announced that as king of England he was allowing himself a divorce, the pope could excommunicate him. This meant that under Catholic Church law, your soul could never get to Heaven. To someone living at the time of Henry, this was a very real fear, and a threat which the Catholic Church used to keep people under its control.

Another approach Henry used was to make a special appeal to the pope so that he might get a special “Papal Dispensation”. This meant that the pope would agree to Henry’s request for a divorce purely because Henry was king of England but that it would not affect the way the Catholic Church banned divorce for others. The pope refused to grant Henry this and by 1533 his anger was such that he ordered the Archbishop of Canterbury to grant him a divorce so that he could marry Anne Boleyn.

The Archbishop granted Henry his divorce – against the wishes of the pope. But what else could the archbishop do if he wanted to remain on good terms with Henry?

This event effectively led to England breaking away from the Roman Catholic Church based in Rome. Henry placed himself as head of the church and in that sense, in his eyes, his divorce was perfectly legal. In 1533, few were brave enough to tell him otherwise!

How did the people of England react to this? In fact, the vast bulk of the population were very angry at the way the Roman Catholic Church had used them as a source of money. To get married you had to pay; to get a child baptised (which you needed to be if you were to go to Heaven – so the Catholic Church preached) you had to pay; you even had to pay the Church to bury someone on their land (which you had to do as your soul could only go to Heaven if you were buried on Holy Ground). Therefore, the Catholic Church was very wealthy while many poor remained just that....poor. Their money was going to the Catholic

Church. Therefore, there were no great protests throughout the land as many felt that Henry would ease up on taking money from them. Henry knew of the Catholic Church's unpopularity and, therefore, used this to his advantage.

Henry was made Supreme Head of the Church by an Act of Parliament in 1534. The country was still Catholic but the pope's power had been ended.

(20) The Reformation

The most wealthy Catholics in England were the monasteries where monks lived. They were also the most loyal supporters of the pope. This made them a threat to Henry VIII.

By the time of Henry, many monks had grown fat and were lazy. They did not help the community as they were meant to do. All they seemed to do was take money from the poor. Also some monasteries were huge and owned vast areas of land. So here were monks not loyal to Henry who were also very wealthy. Henry decided to shut down the monasteries of England. The monasteries were to disappear like sugar dissolves in hot liquid. This is why Henry's attack on the monasteries is called the 'Dissolution' – they were to be dissolved!

Henry wanted to make the Dissolution appear to be backed by law. He sent round government officials to check up on what the monks were doing. This was organised by his chief minister, Thomas Cromwell. The officials knew what the king wanted in their reports – information that the monks were not working, were not saying their prayers etc. Anything to discredit the monks was considered useful. Sometimes, the monks were asked trick questions. "Do you keep all of your vows?" If the monks answered "yes", but had taken a vow of silence, they had not kept all of their vows. If they refused to answer because of their vow of silence, they would be accused of failing to help the king. Or worse, were they trying to hide something?

One report sent to Cromwell commented that the head of the monastery visited, the prior, was a "virtuous man". However, his monks were "corrupt" and "full of vice". The report claimed that the monks had eight to ten girl friends each. This was all that Cromwell needed to shut down the monastery.

The allegations against some monks and nuns 'spoke' for themselves. At Bradley monastic house, the prior was accused of fathering six children; at Lampley Convent, Mariana Wryte had given birth to three children and Johanna Standen to six; at Lichfield

Convent, two nuns were found to be pregnant and at Pershore Monastic House, monks were found to be drunk at Mass.

The smaller monasteries were shut down by 1536 while the larger and more valuable ones were shut by 1540. Few people in England were sorry to see them go. Few monks protested as they were given pensions or jobs where their monastery was. The abbot of Fountains Abbey in Yorkshire, Marmaduke Bradley, was given a £100 pension a year for life – a considerable sum of money then. Some chief monks – abbots – were hanged but this was a rarity.

Some monastery buildings were reduced to ruin as the local population was allowed to take what they wanted as long as the silver and gold in the monastery went to the Crown. This meant that expensive building bricks etc. could be acquired for free. This alone made the Dissolution popular with the majority of the people who tended to dislike lazy monks anyhow.

However, the vast bulk of the wealth of the monasteries went to Henry. Some was spent building defences against France on the south coast around Portsmouth; a small amount went on paying pensions to monks and abbots.

When Henry became king in 1509, the church in England was as follows: Head of the Church: the pope based in Rome Church services: all were held in Latin Prayers: all said in Latin Bible: written in Latin Priests: not allowed to marry. By the death of Henry in 1547, the church in England was as follows: Head of the Church : the king Church services : held in Latin Prayers: most said in Latin. The “Lord’s Prayer” was said in English Bible: written in English Priests: not allowed to marry.

(21) The History of Christmas Pudding

Christmas pudding, also known as plum pudding (because of the abundance of prunes), originated in England. It is traditionally made five weeks before Christmas, on or after the Sunday before Advent. That day was often deemed "Stir-up Sunday," and each family member or child in the household gave the pudding a stir and made a wish.

The rich and heavy pudding is boiled or steamed, made of a heavy mixture of fresh or dried fruit, nuts and sometimes suet, a raw beef or mutton fat. Vegetarian suet may also be used for a lighter taste. The pudding is very dark, almost black, and is saturated with brandy,

dark beer, or other alcohols. The puddings used to be boiled in a "pudding cloth," but today they are usually made in basins.

Many households stirred silver coins (for wealth), tiny wishbones (for good luck), a silver thimble (for thrift), a ring (for marriage), or an anchor (for safe harbor) into the mixture, and when served, whoever got the lucky serving, would be able to keep the charm. When silver coins were not as readily available, the practice ended because people feared putting alloy coins in their pudding. Today small token coins and other objects are made just for this use.

After the pudding has been steamed, it is kept in a cool dry place for several weeks or longer. It will need steamed for a few more hours on the day it is served. There are different ways Christmas pudding is served. Some decorate it with a spray of holly, douse it in brandy or set it on fire. Many families present the pudding in the dark or bring it to the table ceremoniously, where it is met with a round of applause.

Christmas pudding is eaten with brandy butter, rum butter, hard sauce, cream, custard or with a caster sugar. Families sometimes save one pudding for another holiday, like Easter, or even the next Christmas. Many argue that this takes away from the flavor, but that a good pudding will keep that long.

While some still prefer home cooked puddings, ready-made and cooked puddings are now available. Higher quality shops do offer Christmas pudding comparable to homemade. Store bought puddings make great gifts for far-away family members and friends without the hours of work and preparation.

(22) Niccolo Machiavelli

FIVE hundred years ago, on Dec. 10, 1513, Niccolò Machiavelli sent a letter to his friend Francesco Vettori, describing his day spent haggling with local farmers and setting bird traps for his evening meal. A typical day for the atypical letter writer, who had changed from his mud-splattered clothes to the robes he once wore as a high official in the Florentine republic.

Toward the end of the letter Machiavelli mentions for the first time a "little work" he was writing on politics. This little work was, of course, "The Prince."

One of the remarkable things about "The Prince" is not just what Machiavelli wrote, but that he was able to write at all. Just 10 months earlier, he endured the "strappado": Hands tied behind his back, he was strung to a prison ceiling and repeatedly plunged to the floor.

Having at the time just been given the task of overseeing the foreign policy and defense of his native city, he was thrown out of his office when the Medici family returned to power. The new rulers suspected him of plotting against them and wanted to hear what he had to say. Machiavelli prided himself on not uttering a word.

He may well have saved his words for “The Prince,” dedicated to a member of the family who ordered his torture: Lorenzo de Medici. With the book, Machiavelli sought to persuade Lorenzo that he was a friend whose experience in politics and knowledge of the ancients made him an invaluable adviser.

History does not tell us if Lorenzo bothered to read the book. But if he did, he would have learned from his would-be friend that there are, in fact, no friends in politics.

“The Prince” is a manual for those who wish to win and keep power. The Renaissance was awash in such how-to guides, but Machiavelli’s was different. To be sure, he counsels a prince on how to act toward his enemies, using force and fraud in war. But his true novelty resides in how we should think about our friends. It is at the book’s heart, in the chapter devoted to this issue, that Machiavelli proclaims his originality.

Set aside what you would like to imagine about politics, Machiavelli writes, and instead go straight to the truth of how things really work, or what he calls the “effectual truth.” You will see that allies in politics, whether at home or abroad, are not friends.

Perhaps others had been deluded about the distinction because the same word in Italian — “amici” — is used for both concepts. Whoever imagines allies are friends, Machiavelli warns, ensures his ruin rather than his preservation.

There may be no students more in need of this insight, yet less likely to accept it, than contemporary Americans, both in and outside the government. Like the political moralizers Machiavelli aims to subvert, we still believe a leader should be virtuous: generous and merciful, honest and faithful.

Yet Machiavelli teaches that in a world where so many are not good, you must learn to be able to not be good. The virtues taught in our secular and religious schools are incompatible with the virtues one must practice to safeguard those same institutions. The power of the lion and the cleverness of the fox: These are the qualities a leader must harness to preserve the republic.

(23) Why Machiavelli Still Matters

FIVE hundred years ago, on Dec. 10, 1513, Niccolò Machiavelli sent a letter to his friend Francesco Vettori, describing his day spent haggling with local farmers and setting bird traps for his evening meal. A typical day for the atypical letter writer, who had changed from his mud-splattered clothes to the robes he once wore as a high official in the Florentine republic.

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For such a leader, allies are friends when it is in their interest to be. (We can, with difficulty, accept this lesson when embodied by a Charles de Gaulle; we have even greater difficulty when it is taught by, say, Hamid Karzai.) What’s more, Machiavelli says, leaders must at times inspire fear not only in their foes but even in their allies — and even in their own ministers.

What would Machiavelli have thought when President Obama apologized for the fiasco of his health care rollout? Far from earning respect, he would say, all he received was contempt. As one of Machiavelli’s favorite exemplars, Cesare Borgia, grasped, heads must sometimes roll. (Though in Borgia’s case, he meant it quite literally, though he preferred slicing bodies in half and leaving them in a public square.)

Machiavelli has long been called a teacher of evil. But the author of “The Prince” never urged evil for evil’s sake. The proper aim of a leader is to maintain his state (and, not incidentally, his job). Politics is an arena where following virtue often leads to the ruin of a state, whereas pursuing what appears to be vice results in security and well-being. In short, there are never easy choices, and prudence consists of knowing how to recognize the qualities of the hard decisions you face and choosing the less bad as what is the most good.

Those of us who see the world, if not in Manichaeian, at least in Hollywoodian terms, will recoil at such claims. Perhaps we are right to do so, but we would be wrong to dismiss them out of hand. If Machiavelli’s teaching concerning friends and allies in politics is deeply disconcerting, it is because it goes to the bone of our religious convictions and moral

conventions. This explains why he remains as reviled, but also as revered, today as he was in his own age.

(24) Was Shakespeare as popular in his own time as he is now?

Nearly 400 years after his death, the best-known of all Shakespeare's lines is 'To be or not to be' from *Hamlet*, his most popular play in modern times. *Hamlet* has been translated into more than 75 languages (even Klingon), and performances are always taking place across the world.

In early modern London, Shakespeare's most sought-after plays were not the tragedies but the histories.

According to the Database of Early English Playbooks, the two most published plays (and likely the most popular) from the 1590s to the 1630s were *Henry IV Part I* – published 11 times – and *Richard III*, which was published ten times.

Shakespeare wrote ten history plays over his lifetime. He began with a tetralogy – a series of four plays that told the story of English Kings Henry VI and Richard III. He then, like Stars Wars creator George Lucas, went back in time to tell the stories leading up to that, with a focus on Richard II, Henry IV, and Henry V. (The 'Henriad', as these plays are known, seems to have been better received than the Star Wars prequels.)

Although we can only guess at why early audiences were so drawn to the histories, it could be that the histories held an importance that is hard to imagine today. England's ruler at the start of Shakespeare's career was Queen Elizabeth I. As she grew older, the people of England wondered who would be her heir. They were no doubt mindful of the uprisings and usurpations that preceded her reign – many of which were dramatised in Shakespeare's plays.

At one point in her reign, the queen allegedly said 'I am Richard II', comparing herself to Shakespeare's most famous deposed king. In a country where power was centred on the throne, the issues of sovereignty and power, dramatised in Shakespeare's history plays, would have been at the centre of society, affecting everyone within it.

Although *Richard III* and *Henry IV* have always been favourites, recent productions have helped rekindle a popular appreciation of these sometimes overlooked history plays. The Royal Shakespeare Company (RSC) is running the whole Henriad, featuring the stories of Richard II, Henry IV and Henry V in a 'King and Country' season. The recent BBC

television series *The Hollow Crown*, with Jeremy Irons as King Henry IV and Tom Hiddleston as Prince Hal (who eventually becomes Henry V), has created a new generation of fans. It's unlikely that *Henry IV Part I* will outpace *Hamlet*'s popularity anytime soon, though.

(25) Early attitudes to Shakespeare notes and enjoying Shakespeare today

We can tell what Shakespeare's contemporaries thought about his plays by looking at their manuscripts. These were handwritten documents where they would jot down notes, accounts, poems, and snippets from plays. According to the Catalogue of English Literary Manuscripts, early readers didn't prefer Shakespeare over other popular writers of the time, such as Christopher Marlowe or Ben Jonson. It wasn't until the late 17th century, roughly 80 years after *Hamlet* was first performed and published, that readers copied out the 'To be or not to be' speech.

One mid-17th century commentary on *Hamlet* is found in Abraham Wright's notebook (now held at the British Library). Wright criticised *Hamlet* as 'an indifferent [mediocre] play, the lines but mean [average].' Wright went so far as to claim that the gravedigger scene in *Hamlet* was 'since bettered in *The Jealous Lovers*', a play by Thomas Randolph that few people today have heard of. Wright did, however, enjoy *Othello*, which he deemed 'a very good play', and particularly liked the parts of 'villainous' Iago and 'jealous' Othello.

One of the earliest commentaries we have on Shakespeare comes from Gabriel Harvey, a scholar and writer, who noted in the margins of one of his books that 'the younger sort take much delight in Shakespeare's *Venus and Adonis*; but his *Lucrece* and his tragedy of *Hamlet*, Prince of Denmark, have it in them to please the wiser sort'.

These notes also show us that Shakespeare originally became popular as a poet, not a playwright. To many early readers, Shakespeare was known not as a distinguished dramatist, but as a poet, whose most important works were *The Rape of Lucrece*, *Venus and Adonis*, and the Sonnets.

There are more opportunities to enjoy Shakespeare's works today than there were in his own time.

In Shakespeare's time, his plays were performed at the Globe Theatre in London (recreated in today's Shakespeare's Globe). Entrance to the Globe cost only a penny for entrance to the 'pit' – an outdoor area in which people would stand to see the play. This

cheap price meant that trade workers and merchants could afford to see plays at the Globe, while wealthier audience members paid more to sit in the gallery.

Shakespeare's playing company, The Lord Chamberlain's Men (later the King's Men) also performed at the Blackfriars theatre, an indoor theatre where audience members sat on benches to see performances. At sixpence, admission to the Blackfriars was more expensive than the cheapest entrance to the Globe.

Beyond professional theatres, Shakespeare's works were sometimes played at court before the nobility, or in schools.

Today, people from around the world attend Shakespeare's plays in parks, theatres and cinemas. From free outdoor shows to front-row seats in London's West End, Shakespeare's audiences in the 21st century are even more varied than in Shakespeare's time. His works are also performed globally in many artistic disciplines and languages. In 2012, Shakespeare's 37 plays were performed in 37 languages in London as part of the Globe to Globe festival, with companies from across the world celebrating Shakespeare within their own theatrical traditions.

Тексты профессиональной направленности

(1) Motion

Motion is the most fundamental observation in nature. Everyday motion is predictable and deterministic. Predictability is reflected in six aspects of motion: continuity, conservation, reversibility, mirror-invariance, relativity and minimization. Some of these aspects are valid for all motion, and some are valid only for everyday motion. The world and the Universe are action-packed. People and animals are always on the move. The planets are constantly circling the Sun. Are there any rules to all this activity? Our world and the whole Universe are governed by the laws of nature. Scientists who try to understand and learn about these laws are called physicists. Here are some questions that physicists across history have wondered about: When you drop a ball, why does it fall on the ground? Why does not it float up? If you spin a top, why does not it spin forever? Why does it eventually stop? Maybe you have wondered about these things, too. To answer those questions, physicists needed to discover the laws of motion. What is motion? Motion is movement in any direction. You can move up, down, forwards, backwards, and sideways. You can move in circles. You can wiggle, wave, twist, turn, roll, flip, sway, bend, pivot, shake, and spin. A force is a push or a pull. Here is a simple example: A cat hits a ball with its paw and makes the ball roll across the floor. The cat uses force to make the ball move. When you kick a ball or pull open a door, you are also using force. The more force you use, the faster the object will move. Speed measures how far an object moves in a certain amount of time. However, things do not always move at the same speed. Forces can cause moving objects to speed up or slow down. «Average speed» equals «distance divided by time». So why do things in motion slow

down and a stop after a while? The answer is «friction». Friction is another kind of force. Friction is two things rubbing or sliding against each other. Skis on snow. A car on a road. A ball rolling across a carpet. Friction is a force that slows down moving objects. If you roll a ball across a shaggy rug, you can see that there are lumps and bumps in the rug that make the ball slow down. The rubbing, or friction, between the ball and the rug is what makes the ball stop rolling. But what would happen if you rolled the ball across a very smooth surface and there was no wall or obstacle in the way? Would the ball keep rolling forever? Unfortunately, no. There is no such thing as a «frictionless surface». There is friction between all objects and materials when they are touching. To the naked eye, an object or surface may look perfectly smooth. If you looked at it under a microscope, you could see the tiny lumps and bumps that create friction when any two objects slide against each other. There is even friction when an object moves through the air. The less friction there is, the longer objects in motion can keep moving. For example, if you pushed off and tried to slide across the sidewalk in sneakers, you would not get very far. There is too much friction between the rubber soles of your sneakers and the rough concrete sidewalk. However, if you wore ice skates and used the same amount of force to push off and slide across an ice rink, you would glide for a long way. There is not much friction between the thin metal blade of an ice skate and the slick ice of the rink. Some forces are invisible and can make objects move without touching them. You have probably played around with magnets before and know that magnets have an invisible pull—a force that can attract iron and steel objects. A magnet has a «north pole» and a «south pole». If you take two magnets, the north pole of one magnet and the south pole of the other will pull toward each other. If you try to join the north poles of the two magnets, however, the magnets will push each other away. The same is true if you try to put the two south poles together—the magnets will repel each other. Magnets may seem mysterious because they can pull on other objects and make them move without touching them. It would be wise to mention that there is another invisible force that you interact with every second of every day and you probably take it for granted. That force is gravity. Gravity is the invisible force that holds us to the surface of the Earth. 9 Earth's gravity pulls objects toward the center of the Earth. So when you drop a book, it falls to the ground instead of floating away. When you jump up, gravity pulls you back down. Every object actually has gravity, whether it is the Earth, the Sun, a person, or just a marble. The more «mass» an object has, the stronger its force of gravity. Mass just means how much «stuff» is in an object. Some materials are packed with more stuff than others. For example, steel has more stuff in it than Styrofoam. If two balls are the same size, and one is made of foam and one is made of steel, the steel ball will have greater mass. The Earth and moon both have gravity that is strong enough to pull them toward each other. Although the moon's gravity is not as strong as Earth's, it pulls on the water in our oceans and creates the tides. So, if the Earth and moon are pulled toward each other, why don't they crash into each other? The moon is held in orbit by the force of Earth's gravity. The speed of the moon's orbit is what prevents the moon from falling down to Earth. If the moon went slower, it would fall to Earth. If it went faster, it would escape the Earth's gravity and fly off into space. Isaac Newton was a famous scientist who was interested in all sorts of things, from gravity and the orbits of planets to the rules about how objects move. One of his most important discoveries is called Newton's First Law of Motion. Using experiment and observation, Newton showed that objects have a tendency to keep doing what they are doing. Objects that are still, stay still. Objects that are moving, keep moving. A still object stays still and a moving object keeps moving in the same straight line, unless a force pushes or pulls it. Whether they are moving or not moving, objects resist changing their «state of motion». This is called inertia. Inertia is the reason seatbelts are important. If you are in a fast-moving car and the driver slams on the brakes, the car will

stop, but you will keep moving forward. The seatbelt stops you, so you do not hit the dashboard or windshield

(2) . Forces and matter. The standard model of particle

Standard Model of particle physics, which was formulated in the 1970s, describes the universe in terms of Matter (fermions) and Force (bosons). The Standard Model consists of 17 particles. Twelve of the 17 fundamental matter-particles are fermions: 6 quarks and 6 leptons. The remaining five particles are bosons, four of which are physical manifestations of the forces through which particles interact. At high energies, the weak nuclear force merges with electromagnetic force. The Higgs boson is associated with the Higgs field which gives mass to electrons, elementary quarks, Z and W bosons, and the Higgs boson itself. It would be wise to mention that the strong nuclear force associated with the gluon particle gives mass to atomic nuclei, by binding together the three quarks inside protons and neutrons, and all attempts to include gravitons or gravity into the Standard Model have failed. Gluons interact only with quarks and themselves, but all the other bosons interact with both leptons and quarks. Quarks carry both electrical and color charge, but leptons have no color charge, and only non-neutrino leptons have electrical charge. Neutrinos carry neither electrical nor color charge. 16 According to Big Bang theory, the existing universe emerged from an explosion in a vacuum that occurred 13.7 billion years ago. The four forces were unified until 10⁻⁴³ seconds after the Big Bang, after which first gravity and then strong nuclear force separated from the other two forces. At 10⁻¹² seconds after the Big Bang electromagnetism separated from the weak nuclear force, and the universe was filled with a hot quark-gluon plasma that included leptons and antiparticles. At 10⁻⁶ seconds hadrons began to form. Most hadrons and antihadrons were eliminated by annihilation, leaving a small residue of hadrons by one second post-Big Bang. Between one and three seconds after Big Bang the universe was dominated by leptons/antileptons until annihilation of these particles left only a small residue of leptons. The universe was dominated by photons created by all of the matter/antimatter annihilations, and the predominance of matter over antimatter had been established. Between 3 and 20 minutes after the Big Bang protons and neutrons began to combine to form atomic nuclei. A plasma of electrons and nuclei (ionized hydrogen and helium) existed for 300,000 years until the temperature dropped to 5,000°C when hydrogen and helium atoms formed. If matter and antimatter were perfectly symmetrical, the cooling of the universe would have resulted in particle/antiparticle annihilation that would have left the universe filled only with photons. However, for every billion mutual annihilations a particle of matter remained comprising the existing matter of the universe. The predominance matter over antimatter is a consequence of charge-parity violation (CP violation). About 99% of the photons in the universe (the cosmic microwave background) are the result of Big Bang annihilations. Photons from stars are a trivial contribution, by comparison. The standard model used by cosmologists predicts that the universe is composed of 5% ordinary matter, 27% cold dark matter, and 68% dark energy. Dark matter reputedly caused hydrogen to coalesce into stars, and is a binding force in galaxies. Dark energy is accelerating the expansion of the universe. The cosmologists' standard model also predicts that within the first 10⁻³² of a second after the Big Bang, the universe doubled in size 60 times in a growth spurt known as inflation. Dark matter does not interact with the electromagnetic force, thus making it transparent and hard to detect, despite the fact that dark matter must permeate the galaxy. Unlike visible matter, dark matter is nonbaryonic 17 - its composition is outside of the (unextended) Standard Model. Neutrinos may be a low-mass example of dark matter. Invisible Weakly Interacting Massive Particles (WIMPs having thousands of times the mass of a proton) have been hypothesized as being the substance of dark matter. It is believed that the effect of Earth moving through a dark matter «wind» results in a 10% greater dark matter flux when it is

summer in the Northern Hemisphere than when it is winter. Some physicists believe that dark matter does not exist, but that theories of gravitation need to be revised (as is proposed by modified Newtonian dynamics). The most prosaic goal of the Large Hadron Collider (LHC, the enormous particle accelerator that first began operation in September 2008 at CERN, Europe's particle physics laboratory near Geneva, Switzerland) was to find the Higgs boson. The Higgs boson adheres to the W and Z bosons to give them mass, but does not adhere to photons (leaving photons massless). The more particles interact with the Higgs field, the more massive they become. The bosons that mediate electromagnetism (photons) and the strong force (gluons) are massless, but the bosons that mediate the weak force (Z and W bosons) have a mass about a hundred times greater than the mass of a proton. The Higgs field, not the Higgs boson, gives energy to particles. Because of Einstein's $E = mc^2$, giving energy is equivalent to giving mass. Heavier particles interact with the Higgs field more than lighter particles, the heavy top quark more than any other particle. A Higgs field would fill the vacuum of space with Higgs bosons, just as the electromagnetic field fills the vacuum of space with photons. Two detectors were created to search for the Higgs boson: (1) CMS (Compact Muon Solenoid) and (2) ATLAS (A Toroidal LHS ApparatuS). Neither detector could detect a Higgs boson directly, but the Higgs boson rapidly decays into photons, Z or W bosons, or fermions, which CMS and ATLAS can detect. Detection is most accurate for decay into two photons, but that mode of decay only happens 0.2-0.3% of the time. The probability of a Higgs boson being produced from a single high-energy proton collision is about one in ten trillion (1×10^{13}) because the interaction between quarks and gluons with the strong nuclear force are far more powerful than their interaction with the Higgs field. A Higgs boson could be formed from gluons from the colliding protons fusing together, or by quarks from the protons emitting Z or W bosons that fuse. Following the discovery of the Higgs boson, the LHC can focus on learning more about that boson's 18 properties - and possibly explain why the Higgs boson is required to give particles a mass. The LHC could validate or invalidate models of supersymmetry which double the number of particles in the standard model by pairing every boson with a fermion superparticle - and pairing every fermion with a boson superparticle (somewhat analogous to antimatter). However, most particle physicists are hoping to make discoveries with the LHC that gets beyond the Standard Model, including an understanding of dark matter. The Standard Model treats fundamental particles as point-like entities having no dimensions, adjusted for by a kludge called renormalization. String theory removes the need for renormalization and provides mathematically satisfying explanations for many other problems. But string theory has still not fulfilled its promise of unifying gravity and quantum mechanics. Nor has it produced testable hypotheses, because strings could only be measured at energies well beyond the capacities of existing particle accelerators. Some physicists worry that aesthetic elegance is displacing evidence as the basis of physical theory.

(3)Energy transfers and energy transformations

Energy is the capacity to do work. All living organisms require energy for carrying on their vital metabolic activities. The primary source of energy for living system is solar radiation. The radiant energy of sunlight cannot be utilised directly by all living organisms. This ability rests only with the green plants. All the other organisms have to meet their energy requirement only through the green plants. They represent the entry point for the flow of energy in the living system, which is always unidirectional. Energy that flows in the living system is called bio-energy and the study of changes in energy as it flows through a living system, is called bioenergetics. It would be wise to mention that all energy conversions in the living system are governed by certain invariable principles called laws of

thermodynamics, as in any physical system. There are two types of energy changes in the living system, namely energy transformation and energy transfer. The examples of energy transformation are following: Photosynthesis - in which green plants transform radiant solar energy into chemical energy that gets stored as potential energy in carbohydrates. Bioluminescence -in which chemical energy is transformed into light energy Conduction of nerve impulses - in which chemical energy is transformed into electrical energy Muscular activity - in which chemical energy is transformed into mechanical energy A classic example of energy transfer in the living system is respiration. Here, the chemical (potential) energy stored in respiratory substrates like glucose, is transferred to ADP and is stored in ATP. The ATP molecules transfer energy to other biological molecules. ATP (adenosine triphosphate) is an energy rich compound having three phosphate group attached to a nucleoside of adenine (a nitrogen base), called adenosine (adenine + pentose sugar). Of the three phosphate groups, the terminal one has a weak linkage. This phosphate group can break spontaneously whenever ATP forms a complex with an enzyme. The breaking up of this bond releases chemical energy causing an immediate shift in the bond energy giving rise to adenosine diphosphate (ADP). ATP is therefore commonly described as energy currency of the cell. In the given article special attention should be paid at entropy (the usual symbol is S). Entropy is a measure of the degree of disorder or randomness of a system. It corresponds to the amount of energy that is not available for work in a system. Loss of energy in the form of heat results in an increase in the entropy of a system. In the biological system, an increasing degree of entropy results in the death of a cell or an organism, unless energy is restored. Living organisms restore their lost energy either directly from sunlight (as in green plants) or from their food molecules (as in other organisms).

(4) The kinetic model of matter

The kinetic molecular theory of matter offers a description of the microscopic properties of atoms (or molecules) and their interactions, leading to observable macroscopic properties (such as pressure, volume, temperature). An application of the theory is that it helps to explain why matter exists in different phases (solid, liquid, and gas) and how matter can change from one phase to the next. The three phases of matter: Notice that the spacing between atoms or molecules increases as we move from a description of the solid phase to the gaseous one. The kinetic molecular theory of matter states that: Matter is made up of particles that are constantly moving. All particles have energy, but the energy varies depending on the temperature the sample of matter is in. This in turn determines whether the substance exists in the solid, liquid, or gaseous state. Molecules in the solid phase have the least amount of energy, while gas particles have the greatest amount of energy. The temperature of a substance is a measure of the average kinetic energy of the particles. 35 A change in phase may occur when the energy of the particles is changed. There are spaces between particles of matter. The average amount of empty space between molecules gets progressively larger as a sample of matter moves from the solid to the liquid and gas phases. There are attractive forces between atoms/molecules, and these become stronger as the particles move closer together. These attractive forces are called intermolecular forces. Let's take water as an example. We find that in its solid phase (ice), the water molecules have very little energy and cannot move away from each other. The molecules are held closely together in a regular pattern called a lattice. If the ice is heated, the energy of the molecules increases. This means that some of the water molecules are able to overcome the intermolecular forces that are holding them close together, and the molecules move further apart, forming liquid water. This is why liquid water is able to flow: the molecules have greater freedom to move than they had in the solid lattice. If the molecules are heated further, the liquid water will become water

vapor, which is a gas. Gas particles have more energy and are on average at distances from each other which are much larger than the size of the atoms/molecules themselves. The attractive forces between the particles are very weak given the large distances between them. The illustration below shows a change in phase. The kinetic theory of matter is also illustrated by the process of diffusion. Diffusion is the movement of particles from a high concentration to a low concentration. It can be seen as a spreading-out of particles resulting in their even distribution. Placing a drop of food coloring in water provides a visual representation of this process – the color slowly spreads out through the water. If matter were not made of particles, then we would simply see a clump of color, since there would be no smaller units that could move about and mix in with the water.

(5) Thermal properties of matter

To discuss the thermal properties of matter, we need to define some general thermal concepts, such as: the difference between heat and temperature, thermal equilibrium, the zeroth law of thermodynamics, and the absolute temperature scale. In everyday language we use the terms «heat» and «temperature» loosely as if they had the same meaning. In physics they have different meanings. Consider the following example. Take a beaker half filled with water and place some ice in it. Put a thermometer in the water and wait till the temperature of the water becomes stable so that the temperature of the water and the ice are the same. Now place the beaker over a Bunsen burner and start heating it. You will notice that the temperature of the water stays the same as long as there is ice left. We all agree that the flame is heating the water but the thermometer says that the temperature does not change. Once all the ice melts, the temperature of the water starts to rise. From this we can see that we need to closely examine our ideas about the meanings of heat and temperature and distinguish them. Temperature is related to the average kinetic energy of the particles (atoms or molecules). Heat is the amount of energy transferred to a system of particles. In the above examples, we were transferred heat to the system, which in turn melted the ice but the temperature did not change. Thermal equilibrium Thermal equilibrium is simply another way of saying that two or more objects are at the same temperature. For instance, your best friend and you have never met, not even shaken hands. Yet if you are in good health you can bet that your body temperatures are at 37 °C. You are both in thermal equilibrium. Ignoring the fact that our extremities (e.g hands, feet and nose) may be colder than the rest of our body. This is sometimes called the zeroth law of thermodynamics. The reason for this is that physicists first found the first and second laws, then realised that there is a more fundamental law so they decided to give it the number zero. More formally the law can be quoted as follows: «Zeroth law of thermodynamics: If object A and object B are in thermal equilibrium with object C, then they are in thermal equilibrium with each other». Absolute Temperature scale There is a physical lower temperature limit of matter. Nothing can be cooled below -273.15 °C. For convenience, scientists have devised the absolute temperature scale which starts with -273.15 °C and called it Kelvin (not degrees Kelvin). So the relationship between Celsius and Kelvin is: $TK = TC + 273.15$, where TK is the temperature in Kelvin, and TC is the temperature in Celsius. Examples: Ice freezes at 0 °C or $TK = 0 + 273.15 = 273.15$ Kelvin. Normal room temperature is at 20 °C or $TK = 20 + 273.15 = 293.15$ Kelvin. How to make a thermometer To measure temperature we have to measure another macroscopic quantity that is directly influenced by temperature. There are many ways to do this. Thermometers use physical properties ranging from electrical resistance to radioactivity. But the oldest of all is the mercury thermometer. All materials change their physical dimensions when heated or cooled. The change in length is a direct measure of temperature. To make a thermometer, we fill a thin glass tube with mercury (some use alcohol). Place the tube in ice that's been sitting in the room for a while and starting to melt. We then note the position of the mercury column on

the glass tube. We can call this level whatever we like, but we choose to call it 0 °C. We then place the tube in boiling water and watch the mercury column expand to another length. We then call this level 100 °C for convenience. We can then divide the length between the two positions into 100 equal segments and call each one 1 °C. Note that there is nothing special about this way of putting marks on a thermometer. It is simply for human convenience. We could have equally chosen a material other than water to calibrate our thermometer. We could have chosen wax. That is, we could have chosen 0 °C to be the temperature when wax just starts to melt, and 100 °C when it boils. There is also no need to call one 0 and one 100 such as the Fahrenheit scale which we will not be using here.

Thermal Expansion When a material is heated or cooled, it changes its dimensions. Generally, it expands when heated and contracts when cooled although there can be exceptions to this rule. Examples: If water is gradually cooled, it shrinks in size as expected. But at 3.98 °C it begins to expand again until it turns to ice at 0 °C. This expansion is peculiar to water and is associated with the unusual shape of the water molecule. This behavior explains why lakes freeze from the top downwards in winter. The colder water is at the top of the lake because it expands and becomes less dense. When this water freezes it insulates the water below it from the outside cold air like a blanket. It is because of this property many fish can survive the winter rather than becoming part of a giant Popsicle. When you first turn on a hot water tap, the water rushes out but is still cold. When it starts to become hot, the flow of water starts to become less and in some cases it stops. This can be explained as follows: the hot water heats the metal valve inside the tap which expands to block off any more flow of water. The change in length of a solid is related to the original length and the change in temperature. , where ΔL is the change in length, L_0 is the original length before the change, ΔT is the change in temperature, and α is the linear thermal coefficient of expansion, which is different for different materials.

Thermal Expansion at the atomic level At the atomic level, thermal expansion means there is an increase in the average spacing between atoms. As a particular atom oscillates about its equilibrium position, it experiences an asymmetric potential energy as shown in figure 2. If it moves towards another atom it experiences a very steep rise in the potential energy. Whereas if it moves away from the other atom, it experiences a relatively slow increase in the potential energy and so travels much further. The asymmetry in the potential energy curve leads to a shift in the average position of the atom.

(6) Sound and light

Physics is a specific area of study in the field of science that focuses on the makeup and properties of both energy and matter, as well as how the two interact together. The most basic and significant matters in physics are the study of light and sound. A lot of more advanced principles and studies in the realm of physics lead back to general knowledge about the way both of these function. One of the most important facts to understand about both light and sound is that both are forms of energy that move in waves. While they are both forms of energy that travel in the form of waves, there are vital differences between sound waves and light waves. Sound and light travel at significantly different speeds. Light waves move at speeds that are nearly one million times faster than sound waves are capable of traveling. Light waves are capable of moving through empty space at speeds of around 186,000 miles (or 299,792,458 meters) per second. This is faster than most humans can even begin to comprehend. This is also the reason behind the expression, «faster than the speed of light». In the field of physics, the term «light» is usually used to refer to electromagnetic radiation. However, there are various other types of light. Other forms of light include infrared light, ultraviolet light and light that is visible to humans, known as visible light. Each type of light has different wave length frequencies, some being high and some being low. The frequency of the light determines if it is detectable by the human eye, although humans are capable of

seeing different types of wave lengths than other species. Insects such as bees and spiders, for instance, are capable of viewing ultraviolet light, while reptiles like snakes can view some infrared lights. Some mammals, like monkeys, are capable of seeing the same light as humans. Others, like dogs, see similar light but view fewer colors that are a lot dimmer than humans perceive them to be. Dogs often perceive light and colors as a dull yellow, blue or gray. The main key to understanding light is in realizing that light is all around, in many forms, although humans are simply unable to view most types with their eyes alone. 54 Sound waves are much different than light waves in the manner in which they travel. Sound waves move much slower than light waves at speeds of about 1,125 feet (about 340 meters) per second. Sound waves are also different in the sense that they travel through any type of substance, whether solid, liquid or gas, whereas light travels best through empty space. When sound waves hit materials, they cause vibrations. These vibrations are either high frequency or low frequency. Low frequency sound waves produce low tones while high frequency waves create high-pitched tones. When the frequency of the sound waves changes, it creates a change of pitch in the sound that is heard by the human ear. As with light waves, the level of sound wave frequencies that can be perceived is dependent upon the capability of the species body. Humans are actually not among the greatest hearing species in the world. Human ears are only capable of hearing frequencies of about 20 kilohertz (a form of measuring frequencies), while the species that is known to have the highest capability of hearing, the Greater Wax Moth, can hear frequencies of around 300 kHz. As with light waves, it is also important to remember that sound waves are everywhere, despite the fact that human ears are incapable of hearing many sounds. Understanding the speed of light and sound, the way they travel and how they both operate is vital knowledge to have when it comes to pursuing more complex subjects in physics such as radiation and atoms.

(7) The nuclear atom

The search for the atom began as a philosophical question. It was the natural philosophers of ancient Greece that began the search for the atom by asking such questions as: What is stuff composed of? What is the structure of material objects? Is there a basic unit from which all objects are made? As early as 400 B.C., some Greek philosophers proposed that matter is made of indivisible building blocks known as atoms (the word «atom» in Greek means indivisible). To these early Greeks, matter could not be continuously broken down and divided indefinitely. Rather, there was a basic unit or building block that was indivisible and foundational to its structure. This indivisible building block of which all matter was composed became known as the atom. The early Greeks were simply philosophers. They did not perform experiments to test their theories. In fact, science as an experimental discipline did not emerge as a credible and popular practice until sometime during the 1600s. So, the search for the atom remained a philosophical inquiry for a couple of millennia. From the 1600s to the present century, the search for the atom became an experimental pursuit. Several scientists are notable, among them are Robert Boyle, John Dalton, J.J. Thomson, Ernest Rutherford, and Neils Bohr. Boyle's studies (middle to late 1600s) of gaseous substances promoted the idea that there were different types of atoms known as elements. Dalton (early 1800s) conducted a variety of experiments to show that different elements can combine in fixed ratios of masses to form compounds. Dalton subsequently proposed one of the first theories of atomic behavior that was supported by actual experimental evidence. English scientist J.J. Thomson's cathode ray experiments (end of the 19th century) led to the discovery of the negatively charged electron and the first ideas of the structure of these

indivisible atoms. Thomson proposed the Plum Pudding Model, suggesting that an atom's structure resembles the favorite English dessert - plum pudding. The raisins dispersed amidst the plum pudding are analogous to negatively charged electrons immersed in a sea of positive charge. Nearly a decade after Thomson, Ernest Rutherford's famous gold foil experiments led to the nuclear model of atomic structure. Rutherford's model suggested that the atom consisted of a densely packed core of positive charge known as the nucleus surrounded by negatively charged electrons. While the nucleus was unique to the Rutherford atom, even more surprising was the proposal that an atom consisted mostly of empty space. Most the mass was packed into the nucleus that was abnormally small compared to the actual size of the atom. Neils Bohr improved upon Rutherford's nuclear model (1913) by explaining that the electrons were present in orbits outside the nucleus. The electrons were confined to specific orbits of fixed radius, each characterized by their own discrete levels of energy. While electrons could be forced from one orbit to another orbit, it could never occupy the space between orbits. Bohr's view of quantized energy levels was the precursor to modern quantum mechanical views of the atoms. The mathematical nature of quantum mechanics prohibits a discussion of its details and restricts us to a brief conceptual description of its features. Quantum mechanics suggests that an atom is composed of a variety of subatomic particles. The three main subatomic particles are the proton, electron and neutron. The proton and neutron are the most massive of the three subatomic particles; they are located in the nucleus of the atom, forming the dense core of the atom. 88 The proton is charged positively. The neutron does not possess a charge and is said to be neutral. The protons and neutrons are bound tightly together within the nucleus of the atom. Outside the nucleus are concentric spherical regions of space known as electron shells. The shells are the home of the negatively charged electrons. Each shell is characterized by a distinct energy level. Outer shells have higher energy levels and are characterized as being lower in stability. Electrons in higher energy shells can move down to lower energy shells; this movement is accompanied by the release of energy. Similarly, electrons in lower energy shells can be induced to move to the higher energy outer shells by the addition of energy to the atom. If provided sufficient energy, an electron can be removed from an atom and be freed from its attraction to the nucleus. (Adopted from www.physicsclassroom.com)

(8)Information technologies in Russia and the world

Internet and computer growth in Russia has been the envy of every European and North American country during the past few years. But growth in all IT areas is expected to slow by a considerable amount. Cell phone growth in Moscow and St. Petersburg is limited to subscribers exchanging models. Mobile communication companies had hoped that 3G technology would prove to be a boom, but the lack of equipment capable of handling such a technology is holding back development. Internet usage has nearly reached the limit that current technological equipment can provide. There is not enough money to increase capacity. The largest computer and Internet service providers in Russia will reach yearly turnover of \$500 million, which is far too small of a sum to begin improving communication structures on their own without the support of the government. The government launched the Electronic Russian program which was designed to create an electronic government that would increase interaction between citizens and their leaders. Different ministries and agencies couldn't reach the agreement concerning the ways of implementation of the program, so it came to nothing. The government has developed a new plan. This time a single ministry will be responsible for «informatization», and its decisions will be carried out by all ministries and agencies. The newly created IT office will have not only the necessary resources but also a fair share of political leverage. Until 11 this is not done, Russia will have

to wait many years for IT business to become large enough to put pressure on the government to invest heavily in Internet services. The most popular Internet service is e-mail. Most of the people, who have access to the Internet, use the network only for sending and receiving e-mail messages. However, other popular services are available on the Internet: reading USENET News, using the World-Wide Web, telnet, FTP and Skype. In many developing countries the Internet may provide businessmen with a reliable alternative to the expensive and unreliable telecommunication systems of these countries. Commercial users can communicate over the Internet with the rest of the world and can do it very cheaply. When they send e-mail messages, they only have to pay for phone calls to their local providers, not for calls across the countries or around the world. But who actually pays for sending e-mail messages over the Internet long distances, around the world? The answer is obvious: users pay their service provider a monthly or hourly fee. Part of this fee goes towards its cost to connect to a larger service provider. Part of the fee got by the larger provider goes to cover its cost of running a worldwide network of wires and wireless stations

(9) Is there an end to the computer race?

Today the word «electronics» is in general usage. Millions of people have electron watches. In factories and plants we are surrounded with electronically controlled machines and instruments, we are carried by airplanes, ships, trains and cars with built-in electronic devices, and satellites circle the globe. In other words, we are living in an electronic world. And the center of this world is a silicon plate of a few square millimeters, an integrated circuit, or a chip, as it is more commonly known. The integrated circuit is undoubtedly one of the most sophisticated inventions of man, science and technology. It is in the heart of every electronic device and the more Computers and TV sets we need, the more integrated circuits are required. When we speak about future development of computers we mean not only quantity, but also high technology and high speed. As the operation of an integrated circuit depends on microscopic components the purity of all materials and the cleanness at the plant they are produced must be of the highest quality. A continuous search is going on in laboratories throughout the world for more perfect, reliable and high speed electronic circuits. In the past it took scientists and researchers a whole lifetime to make a few thousand calculation, whereas for a modern computer this task is a matter of a few seconds. At present computers capable of performing billions of operations a second are required. Supercomputers are different from ordinary computers. The ordinary computer does the computations 15 operation by operation, while the supercomputer operates like a brain: all operations are being done simultaneously. In the next few years engineers will complete the work on computers of above 2 billion operations a second. It will take a few more years to produce a 10-billion operations computer. The fifth-generation computers performing 100 billion operations a second will become available in the near future. Is there an end to this race? According to some researchers, we are close to what can be regarded as a true physical limit. But other specialists think that photons will make the operation a thousand times faster. This means that in the future it will be possible to expect appearance of photon computers and that computations will be done by means of light. Light has several advantages over electronics: light beams are faster, travel in parallel lines and can pass through one another without interference. Already, the optical equivalent of a transistor has been produced, and intensive research on optical-electronic computer is being carried out in a number of countries around the world. In a few decades a new age of light may replace the still youthful electronic age.

(10) Information technologies is my future profession

Young people choose their own careers according to their personal abilities and interests. Career opportunities are open to all young people who have the ability and will to study. We know that computers are getting deeper and deeper into our life. They keep the outer world open to us. With them we can use the Internet, send messages to friends, customers and partners, get information from them through electronic mail. Through the Internet we can make use of archives, university or company databases, library catalogues, and millions of photographs, documents, sound clips, video or whatever else put into digital form. Computers also help to carry out complex work easily and save a lot of time. The computers do calculations, process information and perform many other clever operations. They are also being used in business to collect and analyze data. Every business needs accurate, complete, and timely information to make decisions and survive in today's competitive business environment. Computers are used in manufacturing too. Computer control of automated production opens up new horizons for cheap and quality production of goods. Special programs have been developed for controlling advanced machine functions. Electronic technologies are extensively used to improve productivity and efficiency in forestry sector. Geographic information technologies are improving forest management providing foresters with spatial data, digital maps and other information. In fact, geomatics can help computer professionals to find a wider application of their knowledge and skills. 19 No doubt, we can't do without computers any more, but, however, the people – both professionals and users – are the most important component of the computer system. Computer professionals design computer hardware and related equipment, they design, create, and develop computer software and professional computer operators run the computer systems and monitor their activities during processing. As it is, a computer professional is a person in the field of computers who has had formal education in the technical aspects of computer use – a programmer or system analyst or computer operator who is concerned only with supporting the computer's physical functions in producing information for the user. The employment picture for computer professionals looks good and is getting better. Several million people are employed as computer programmers, computer operators, information managers, system analysts, data entry clerks and other technical workers. The growth of the microcomputer hardware and software industries in recent years has created a number of new jobs in the retail sales and marketing of computers as well. Many jobs have also been created by companies that manufacture various computer components and by companies that specialize in computer repair. As for me I have made up my mind. I want to be a computer professional. I am sure that information technologies are among the most important in today's world and computer technologists will be able to solve many problems of modern times (from www.cnet.com).

(11) Social implications of computerization

Everything is connected to everything else. A change in one area will cause changes in other areas, even if they aren't readily apparent to us. This means that with opportunities also come problems. We are learning this lesson, for example, in the area of ecology. Are we also learning it in relation to the computer's growing role in business and society? 23 This question is becoming more important as information technology replaces energy as society's main resources. Many people are concerned that too much emphasis has been put on what the computer can do to streamline business and too little on how it may be affecting the quality of our lives. For example, is it distorting the meaning of thought? That is, is it absurd and dangerous to attribute the capabilities of thinking and creativity to a computer? People have experience, convictions and cultural traditions. Are these qualities being devalued? If so,

perhaps we are heading into an era in which machinelike qualities of speed and problem solving will be values more than what used to be called human qualities. Many people believe that the computer's level of «thinking» can be compared simply to a muscle spasm and that too many computer enthusiasts are confusing data with ideas. After all, nothing is information until a person interprets it. And information is not the same as knowledge, which is gained by thinking. Knowledge can be gained without new information being received by the thinker. Can a machine do that? Do you want the equivalent of a muscle spasm control of a weapon system? Society must guard against the creation of inhuman projects thought up only because a computer made it possible, and it must develop standard checking systems to ensure the integrity of data used to make strategic decisions in government as well as business. In addition to the problems of computer-controlled nuclear weapons, the potential for abuse of power concerns many people. On the one hand, the computer could lead to equalization – that is, a democratic situation in which all people have access to the same information. On the other hand, this possibility could lead to the opposite situation, the existence of huge banks of data and information, electronic communications and inexpensive portable computers has lead some totalitarian countries to outlaw personal possession of computers to avoid the free dissemination of information. Also, the existence of huge central data banks that contain essentially all data related to everyone's public and private life can be frightening to consider. Many people focus on the freedom from routine and boring work that computers give. This is certainly welcome in many situations, but we must remember that what is boring and routine work to one person may be life-saving employment to another. Traditionally, in the United States, many low-level jobs are held by young people and immigrants with language problems. Therefore, what at first seems like an advantage of computerization may really be a disadvantage. McDonald's restaurants came to this conclusion not long ago when they decided not to eliminate the order-cashier positions at the front counters staffed by people and replace them with machines that customers would use to key in their own orders. And maintaining human contact is still better for business. One more problem to consider is the potential for computer-based systems in business to be used to monitor employees. What if terminals were programmed to check your speed, the pauses you make, the breaks you take, the rate of keying errors? Would it be fair for the company to do this to make sure it retains only the most efficient workers and thus increase the value of goods and services to sell? Or would this detract from your dignity as a human being – your right to do some things better than you do others? And would this type of company get high-quality decisions from its employees – or would the employees be too dissatisfied and afraid to work creatively? These are only a few of many computer-related social issues that are being discussed. Keep in mind, however, that although these problems certainly deserve everyone's attention, they should not obscure the opportunities that will be opened up to you if you know how to use the computer in your chosen occupation .

(12) STUDYING INFORMATION TECHNOLOGY Information technology forces an extension of the traditional concept of the document as a fixed, printed object to include bodies of multimedia information. Because of their digital form, these objects are easy to manipulate; they are split into parts, recombined with others, reformatted from one medium to another, annotated in real time by people or machines, and readied for display in many different formats on various devices. Control of these “living” documents, which are expected to become one of the most common units of the digital information universe, is one of the challenges for the emerging virtual library of the human kind. An equally significant new dimension of modern information systems lies in their ability to manipulate information automatically. This capacity is the result of representing symbolic information in digital form. Computer-based information systems are able to perform calculations, analyses,

classifications, and correlations at levels of complexity and efficiency far exceeding human capabilities. They can simulate the performance of logical and mathematical models of physical processes and situations under diverse conditions. Powerful information-transforming technologies now available or under development — data or text to graphics, speech to printed text, one natural language to another — broaden the availability of information and enhance human problem-solving capabilities. Computer visualization is dramatically altering methods of data interpretation by scientists; geographic information systems help drivers of the latest automobiles navigate cities; and interactive applications of networked multimedia computers may, for some, replace newspapers, compete with commercial broadcast television, and give new dimensions to the future of education and training at all levels of society. Information systems applications are motivated by a desire to augment the mental information-processing functions of humans or to find adequate substitutes for them. Their effects have already been felt prominently in three domains: the economy, the governance of society, and the milieu of individual existence. Information systems may be divided into two categories: organizational systems and public information utilities. Information systems in formal organizations may be further distinguished according to their main purpose: support of managerial and administrative functions or support of operations and services. The former serve internal functions of the organizations, while the latter support the purposes for which these organizations exist [D. Hoiberg. Students' Britannica].

(13) The Development of Mathematics in the 17th Century

The scientific revolution of the 17th century spurred advances in mathematics as well. The founders of modern science – Nicolaus Copernicus, Johannes Kepler, Galileo, and Isaac Newton – studied the natural world as mathematicians, and they looked for its mathematical laws. Over time, mathematics grew more and more abstract as mathematicians sought to establish the foundations of their fields in logic. The 17th century opened with the discovery of logarithms by the Scottish mathematician John Napier and the Swiss mathematician Justus Byrgius. Logarithms enabled mathematicians to extract the roots of numbers and simplified many calculations by basing them on addition and subtraction rather than on multiplication and division. Napier, who was interested in simplification, studied the systems of the Indian and Islamic worlds and spent years producing the tables of logarithms that he published in 1614. Kepler's enthusiasm for the tables ensured their rapid spread. The 17th century saw the greatest advances in mathematics since the time of ancient Greece. The major invention of the century was calculus. Although two great thinkers – Sir Isaac Newton of England and Gottfried Wilhelm Leibniz of Germany – have received credit for the invention, they built on the work of others. As Newton noted, "If I have seen further, it is by standing on the shoulders of giants." Major advances were also made in numerical calculation and geometry. Gottfried Leibniz was born (1st July, 1646) and lived most of his life in Germany. His greatest achievement was the invention of integral and differential calculus, the system of notation which is still in use today. In England, Isaac Newton claimed the distinction and accused Leibniz of plagiarism, that is stealing somebody else's ideas but stating that they are original. Modern-day historians, however, regard Leibniz as having arrived at his conclusions independently of Newton. They point out that there are important differences in the writings of both men. Differential calculus came out of problems of finding tangents to curves, and an account of the method is published in Isaac Barrow's "Lectiones geometricae" (1670). Newton had discovered the method (1665-66) and suggested that Barrow include it in his book. Leibniz had also discovered the method by 1676, publishing it in 1684. Newton did not publish his results until 1687. A bitter dispute arose over the priority for the discovery. In fact, it is now known that the two made their discoveries independently and that Newton had made it ten years before Leibniz, although Leibniz published first. The modern notation of dy/dx and the elongated s for integration are due to Leibniz. The most important development

in geometry during the 17th century was the discovery of analytic geometry by Rene Descartes and Pierre de Fermat, working independently in France. Analytic geometry makes it possible to study geometric figures using algebraic equations. By using algebra, Descartes managed to overcome the limitations of Euclidean geometry. That resulted in the reversal of the historical roles of geometry and algebra. The French mathematician Joseph Louis Lagrange observed in the 18th century, "As long as algebra and geometry proceeded along separate paths, their advance was slow and their applications limited. But when these sciences joined company, they drew from each other fresh vitality and thenceforward marched on at a rapid pace toward perfection." Descartes' publications provided the basis for Newton's mathematical work later in the century. Pierre de Fermat, however, regarded his own work on what became known as analytic geometry as a reformulation of Appollonius's treatise on conic sections. That treatise had provided the basic work on the geometry of curves from ancient times until Descartes.

(14) Malware, Adware, Spyware

We have a whole selection of software that may come bundled under the name of malware. Short for malicious software, malware is any software that has been designed (programmed) specifically to damage or disrupt a computer system. The most common forms of malware are computer viruses, worms, and Trojan horses. Other common types of software are adware and spyware. Adware is considered a legitimate alternative offered to consumers who don't wish to pay for software. Today we have a growing number of software developers who offer their goods as sponsored freeware until you pay to register. Generally, most or all features of the software are enabled, but you will be viewing sponsored advertisements while the software is being used. If you are using legitimate adware, when you stop running the software, the ads should disappear, and you always have the option of disabling the ads by purchasing a registration key. Unfortunately, some applications that contain adware track your Internet surfing habits in order to serve ads related to you. When the adware becomes intrusive like this, we move it into the spyware category and it then becomes something you should avoid for privacy and security reasons. Spyware works like adware, but is usually a separate program that is installed unknowingly when you install another application. Once installed, the spyware monitors user activity on the Internet and transmits that information in the background to someone else. Spyware can also gather information about e-mail addresses and even passwords and credit card numbers. Unlike adware, spyware is considered a malicious program

(15) Antivirus Software

Antivirus software can offer protection from the threat of malware: worms, Trojans, viruses and spyware. According to Top Ten Reviews, a good antivirus program can also protect your computer from phishing scams, keyloggers, rootkits and email-borne threats. Phishing scams are programs that appear to be legitimate sites in an attempt to obtain sensitive information from the user. Keyloggers track every key stroke made on your computer to steal passwords and account information. A rootkit takes control of your computer without your knowledge. Installation and setup of security software should be simple and quick. In addition, it should be user-friendly, even for beginners. Top Ten Reviews notes that every day users want to be able to install the program and forget about it, without the need for ongoing maintenance. Antivirus software should include updates as new viruses are identified. Automatic updates are often built into the software. Consumer Search notes that most programs include one year of free updates before requiring the purchase of a subscription or a new version. Signature

checking is by far the most common method used by antivirus programs to detect malicious threats. The software has an extensive database of known viruses and malware, and each time it scans a file, it compares the results to the information contained in its database. If the software finds a “signature” match, it will either warn the user or remove it right away, mostly depending on the seriousness of the threat. Some threats can be quarantined by the antivirus program, as well. Basically, it encrypts the file with a different code to render it useless instead of removing it altogether. Of course, with new viruses coming out every day, the database must be kept completely up to date for the software to detect incoming threats. Another way to detect malicious files or programs on a computer is through monitoring its behaviour. Programs that attempt to access certain parts of the root key registry or modify an existing executable file will send a red flag up, and the software will take action against the threat, if necessary. This approach is a good one to use because it can then detect malicious software that has not yet been added to the database simply by the way it is acting. However, this can also lead to the program warning the user about every single thing it finds, which may get irritating over time. Anti virus software is becoming more advanced by the second, though, and these false warnings are being lessened every day. The third common way for antivirus programs to pick out threats is to emulate the file in a safe environment created by the software itself. For instance, if a suspicious file has entered the computer, the program will take the executable files of the program and run them behind the scenes in a simulated setting to see what it does. If the software finds it is indeed malicious and a threat, it will then either quarantine or delete the harmful material before real damage can be done. This method can also trigger false warnings, and at that point it usually leaves it up to the user to decide what to do with the file. If the user recognizes and trusts the program, the antivirus software will let it remain. If the user chooses for the program to take action against it, the perceived threat will be removed.

(16) Information, Machine Words, Instructions, Addresses and Reasonable Operations

Information is a set of marks or signs that have meaning. These consist of letters and numbers, digits or characters, typewriter signs and other kinds of signs. A computer reacts differently to different digits or characters, and reacts to them as units that have meaning. For example, information for an analog computer has to be in the form of distances, or rotations, or voltages, or other physical variables. And for a digital computer information has to be in the form of digits or numbers. Any information can be represented by the binary system including two digits: one (1) and zero (0). Each 1 and zero is a separate binary digit called a bit. A bit is the smallest part of information. Bits are typically grouped in units that are called bytes. A byte is the basic unit of information used in modern computers. It consists of eight bits. The bytes are usually handled in standard groups called machine words, or just words. There are two basic types of information or words that can be put into a memory cell or location: words that are numerical quantities and words that are computer instructions. Regularly, an instruction to the machine is expressed as a word; and so the same set of characters may have meaning sometimes as a number, sometimes as an instruction. A speed of 96,000 characters per second is the same as a speed of 8,000 words per second. Most human beings could not take even a 12-digit number per second. Physically, the set of bits is a set of arrangements of some physical equipment. One of the ways of storing information in a computer is storing by using a set of small magnetically polarized spots on a magnetic surface. The computer is told what operations to perform by means of instructions. An instruction is a command to the computer. It consists of a verb (an operational code) and a noun (an operand). For example, if the computer is instructed “Add 365 the number of times stated in the register R”, and if the register R stores the code for number 3, then the computer

will perform that operation 3 times. An instruction word looks like a number, and there is no way telling from the word itself, whether it is a quantity or an instruction. The computer must be told exactly which address contains an instruction and which contains a quantity. An address is the name of a particular memory location or cell. Each memory location (word or byte) has its own unique address or number just like a post office box. For example, if the computer contains 100 memory cells, their respective addresses might be the numbers from 1 to 100 (or 0 through 99). And instead of saying "A word is in a memory cell", the computer personnel say, "The content of an address is a word." Reasonable operations are mathematical and logical. Mathematical operations include arithmetic and algebraic operations. Arithmetic operations are addition, subtraction, multiplication, division, taking a square root, etc.; and algebraic operations are raising to a power as well as differentiating and integrating. Logical operations include comparing, selecting, sorting, matching, etc. These are operations which may be performed either on numbers or on expressions consisting of letters such as ordinary words. A very important logical operation performed by a computer is determining, e.g. which of the two operations is to be performed next.

(17) What Is Programming?

A program (routine) is a complete set of instructions for doing a particular task. The process of preparing such a program is known as programming. Programming involves the following items: a. Consideration of the problem. Is the problem completely defined? Can we find a method of solution? Will the method fit the computer we use? Will we have enough time, both to prepare the solution on the computer and to run out the answers? b. Analysis of the problem. Does the algorithm that we can use exist? Are there "canned" routines that we can apply? That is, are there parts of this problem for which we may already have the computer solution? How much accuracy do we want? How well we assure ourselves that the solutions are correct? Can we construct test data to check the computer solution? Thus, programming covers all activities from the start of the job up to the end and including flowcharting. There are five steps of programming: 1. making a flow chart 2. actual coding 3. storing the final code into the computer's memory 4. debugging the code 5. running the code and tabulating the result. The first step requires a clear and exact determination of all future calculations which are then presented in a flow chart. The flow chart is a diagram or a picture of a code, which is always useful for visualizing the relations between different parts of the code. This diagram is usually made before putting in a particular instruction. There are three types of symbols used in a flow chart: (1) to represent calculation functions; (2) to show various alternatives of decisions; (3) to eliminate the spare lines and indicate which line to follow if the diagram has to follow on the next page. The second step is the process of actual coding, in which all digits are assigned to the symbols to prepare the final code. At this phase, symbolic coding aids are used. Then comes the third step when the final code is entered into the computer memory. A subroutine (subcode) may be used many times, but stored only once in the final code. The fourth step is the debugging of the code. This is the technique of detecting, diagnosing and correcting the errors which may appear in the program. And finally comes the fifth step, which consists in running the code and tabulating the results. One of the most important details of coding is that the actual bits in the instruction are given not in a binary code. The instruction is represented in the octal equivalent. This means that two octal numbers represent the instruction, and every address will be represented by three octal numbers.

(18) Algorithms

Several decades ago the word algorithm was unknown to most educated people; indeed, it was scarcely necessary. The rapid rise of computer science, which has the study of algorithms as its focal point, has changed all that: the word is now essential. There are some other words that almost, but not quite, capture the concept that is needed: procedure, recipe, process, routine, method. Like these things, an algorithm is a set of rules or directions (instructions) for getting a specific output from a specific input. The distinguishing feature of an algorithm is that all vagueness must be eliminated; the rules must describe operations that are so simple and well-defined that they can be executed by a machine. Furthermore, an algorithm must always terminate after a finite number of steps. A computer program is the statement of an algorithm in some well-defined language, although the algorithm itself is a mental concept that exists independently of any representation. Anyone who has prepared a computer program will appreciate the fact that an algorithm must be very precisely defined, with attention to detail that is unusual in comparison with other things people do. Programs for numerical problems were written as early as 1800 B. C., when Babylonian mathematicians gave rules for solving many types of equations. The rules as step-by-step procedures were applied systematically to particular numerical examples. The word algorithm itself originated in the Middle East, although, at a much later time. Curiously enough, it comes from the Latin version of the last name of the Persian scholar Abu Jafar Mo hammed ibn Musa Al-Khwarizmi (Algorithmi), whose textbook on arithmetic gave birth to algebra as an independent branch of mathematics. It was translated into Latin in the 12th century and had a great influence on the development of computing procedures. The name of the textbook's author became associated with computations in general and used as a term algorithm. Originally, algorithms were concerned solely with numerical calculations; Euclid's algorithm for finding the greatest common divisor of two numbers is the best illustration. Euclid's powerful algorithm has become a basic tool in modern algebra and number theory. Nowadays, the concept of algorithm is one of the most fundamental notions not only in mathematics, but in science and engineering. Experience with computers has shown that the data manipulated by programs can represent virtually anything. In all branches of mathematics, the task to prove the solvability or unsolvability of any problem requires a precise algorithm. In computer science, the emphasis has now shifted to the study of various structures by which information can be represented and to the branching or decision-making aspects of algorithms, which allow them to fall on one or another sequence of operations depending on the state of affairs at the time. It is precisely these features of algorithms that sometimes make algorithmic models more suitable than traditional mathematical models for the representation and organization of knowledge. Although numerical algorithms have many interesting features, there are non numerical ones and, in fact, algorithms in Cybernetics deal primarily with manipulation of symbols that need not represent numbers. Algorithm-designing is both pure and applied branches of Cybernetics. Current algorithms are becoming more and more refined and sophisticated. Since computers "think" differently from people, methods that work well for the human mind are not necessarily the most efficient when they are translated to a machine.

(19) Radioactivity

Sometimes the nucleus of an atom is unstable. A change will occur in the nucleus to make it more stable. The change is called decay. When a nucleus decays it will emit some particles or waves. Emitting particles or waves from the nucleus is called radioactivity. Radioactivity was discovered by A. H. Becquerel in 1896. Radioactive decay is a random process which gives out heat. The particles or waves that are emitted are called radiation. The radiation was classified by E. Rutherford as alpha, beta, and gamma rays (for the first three letters of the Greek alphabet) according to their ability to penetrate matter and ionize air. Alpha decay An

alpha particle is identical to a helium nucleus, being made up of two protons and two neutrons bound together. It initially escapes from the nucleus of its parent atom, invariably one of the heaviest elements, by quantum mechanical processes and is repelled further from it by electromagnetism, as both the alpha particle and the nucleus are positively charged. The process changes the original atom from which the alpha particle is emitted into a different element. Its mass number decreases by four and its atomic number by two. For example, uranium-238 will decay to thorium-234. Sometimes one of these daughter nuclides will also be radioactive, usually decaying further by one of the other processes described below.

Beta decay Beta decay itself comes in two kinds: β^+ and β^- . As for β^- emission, it occurs by the transformation of one of the nucleus's neutrons into a proton, an electron and an antineutrino. Byproducts of fission from nuclear reactors often undergo β^- decay as they are likely to have an excess of neutrons. β^+ decays is a similar process, but involves a proton changing into a neutron, a positron and a neutrino.

Gamma decay After a nucleus undergoes alpha or beta decay, it is often left in an excited state with excess energy. Just as an electron can move to a lower energy state by emitting a photon somewhere in the ultraviolet to infrared 95 range, an atomic nucleus loses energy by emitting a gamma ray. Gamma radiation is the most penetrating of the three and will travel through several centimetres of lead. Beta particles will be absorbed by a few millimetres of aluminium, while alpha particles will be stopped in their tracks by a few centimetres of air, or a sheet of paper.

Half-lives and probability Radioactive decay is determined by quantum mechanics – which is inherently probabilistic. So, it's impossible to work out when any particular atom will decay, but we can make predictions based on the statistical behavior of large numbers of atoms. The half-life of a radioactive isotope is the time after which, on average, half of the original material will have decayed. After two half-lives, half of that will have decayed again and a quarter of the original material will remain, and so on. Uranium and plutonium are only weakly radioactive but have very long half-lives – in the case of uranium-238, around four billion years, roughly the same as the current age of the Earth, or the estimated remaining lifetime of the Sun. The half of the uranium-238 around now will still be here when the Sun dies. Iodine-131 has a half-life of eight days, so, once fission has stopped, less than 1% of iodine-131 produced in a nuclear reactor will remain after about eight weeks. Other radioisotopes of iodine are even shorter-lived. Caesium-137, however, sticks around for longer. It has a half life of around 30 years, and, because of this and because it decays via the more hazardous beta process, is thought to be the greatest health risk if leaked into the environment. Although some radioactive materials are produced artificially, many occur naturally and result in there being a certain amount of radiation in our environment all the time – the «background radiation».

In the background There is a natural level of radiation all around us, which comes from several sources. Some gamma radiation comes from space as cosmic rays. Other radiation comes from sources in the atmosphere, such as radon gas and some of its decay products. There are also natural radioactive materials in the ground – and as well as the obvious elements such as uranium there are also radioactive isotopes of common substances such as potassium and carbon. To understand how much background radiation is around, it helps to distinguish between effects on normal matter and on the human body. The amount of radiation absorbed by non-biological matter is measured in grays, a unit equivalent to a joule of energy per kilogram of mass. For biological tissue, a dose equivalent is measured in sieverts (Sv) depending on the type of radiation involved and how much damage that radiation does to the particular cells affected. The average amount of radiation received from background sources in the UK is around 2–2.5 mSv per year. Because of the preponderance of granite, which contains higher than average levels of uranium, in areas such as Cornwall or Aberdeenshire it can be twice this level – not high enough to cause any concern, but high enough that nuclear facilities can't be built there as the background level already exceeds the maximum allowed

radiation limit. In some parts of the world, such as northern Iran, the background radiation is as high as 50 mSv per year. There are a variety of other natural and routine artificial causes of low doses of radiation. A dental x-ray will give you a dose of under 1 mSv; a full-body CT scan, 10 mSv. As fewer cosmic rays are stopped by the atmosphere the higher you go, the crew of a passenger jet flying between the US and Japan once a week for a year would receive an additional dose of around 9 mSv. Under normal conditions, the dose limit for workers in the nuclear industry is 50 mSv per year. The effects on human health There are two main health effects caused by radiation, which act over the short- and long-term and also at shorter and greater distances. Radiation causes health problems by killing cells in the body, and the amount and type of damage done depends on the dose of radiation received and the time over which the dose is spread out. The dose limits for emergency workers in the event of a nuclear accident are 100 mSv if protecting property or 250 mSv in a life-saving operation. Between that upper limit and 1 Sv received within a single day, exposure is likely to cause some symptoms of radiation poisoning, such as nausea and damage to organs including bone marrow and the lymph nodes. Up to 3 Sv these same effects are more serious with a likelihood of acquiring infections due to a reduced number of white blood cells in the body – with treatment, survival is probable but not guaranteed. 97 Larger doses will, in addition to those symptoms above, cause hemorrhaging, sterility and skin to peel off; an untreated dose of more than 3.5 Sv will be fatal, and death is expected even with treatment for doses of more than 6 Sv. The radiation level decreases with the square of the distance from its source, so someone twice as far away from an external source will receive a quarter of the radiation. Receiving a high dose in a shorter time usually causes more acute damage, as greater doses kill more cells, while the body can have had time to repair some damage with more time having elapsed between doses. However, radioactive material that is spread to a wider area can cause longer-term health effects via prolonged exposure, particularly if they enter the food chain or are inhaled or ingested directly. Taking radioactive materials into the body also presents the greatest danger from atoms that undergo alpha-decay, as alpha particles are not very penetrative and are easily absorbed by a few centimeters of air. Radioactive isotopes of iodine, which undergo beta-decay, can build up in the thyroid gland and can cause thyroid cancer. Attempts to prevent this involve distributing pills that include nonradioactive iodine-127 and which flood the thyroid, preventing uptake of radioactive iodine. For one-off doses, such as those from medical scans, the risk of later developing cancer is estimated at around 1 in 20 000 per mSv received. Absorbing an accumulated dose of 1 Sv over a longer period of time is estimated to eventually cause cancer in 5% of people. However, there is disagreement over whether very small doses comparable to the level of background radiation actually contribute to health effects.

(20) Nuclear reactors

A sample of fissionable material smaller than the "critical size" is unable to carry on a nuclear chain reaction. If the size of the sample is exactly critical, the number of neutrons produced in each generation is the same as that produced in the previous one, resulting in steady nuclear energy liberation. The original Fermi-pile and its later modifications maintain nuclear reactions at the critical size level. It must be mentioned in this connection that the conditions of "criticality" are extremely unstable: a small deviation (отклонение) in one direction will result in the rapid extinction (уменьшение количества нейтронов) of fission neutrons and the cut-off of the nuclear chain reaction, whereas a deviation in another direction will lead to a rapid multiplication of the fission neutrons and the melting (плавление) of the entire structure. 100 Thus, the important problem in maintaining a steady chain reaction is that of regulating the rate of neutron production and of keeping the chain reaction from "dying out" or "running away". This is achieved by using "control rods" made from neutron-absorbing materials (such as boron) which are automatically pushed in or

pulled out from narrow channels drilled through the reacting fissionable material as soon as the rate of neutron production drops below or exceeds the desired level. We have already mentioned that Fermi-piles were unsuitable for purposes of nuclear power production because of the high dilution of uranium by carbon; they should be considered rather as "alchemical plants" in which plutonium is produced. For the purpose of nuclear power production, we use the controlled nuclear chain reactions in pure fissionable materials, such as U235 or Pu239, which can be run at quite high temperatures. In the so-called "swimming pool" reactor (реактор бассейнового типа) in which several cylindrical containers filled with pure fissionable material are placed at the bottom of a large water tank, the water circulating through the tank carries away the heat produced in the fission process and also protects the observer from the deadly nuclear radiation. The color of the water turns blue as a result of the so-called Cherenkoffs radiation produced in water by high-energy electron.

(21) Computer networks Computer networks link computers by communication lines and software protocols, allowing data to be exchanged rapidly and reliably. Traditionally, networks have been split between wide area network (WANs) and local area network (LAN). A WAN is a network connected over long-distance telephone lines, and a LAN is a localized network usually in one building or a group of buildings close together. The distinction, however, is becoming blurred. It is now possible to connect up LANs remotely over telephone links so that they look as though they are a single LAN. Originally, networks were used to provide terminal access to another computer and to transfer files between computers. Today, networks carry e-mail, provide access to public databases and bulletin boards, and are beginning to be used for distributed systems. Networks also allow users in one locality to share expensive resources, such as printers and disk-systems. Distributed computer systems are built using networked computers that co-operate to perform tasks. In this environment each part of the networked system does what it is best at. The high-quality bit-mapped graphics screen of a personal computer or workstation provides a good user interface. The mainframe, on the other hand, can handle large numbers of queries and return the results to the users. In a distributed environment, a user might use his PC to make a query against a central database. The PC passes the query, written in a special language (SQL – Structured Query Language), to the mainframe, which then parses the query, returning to the user only the data requested. The user might then use his PC to draw graphs based on the data. By passing back to the user's PC only the specific information requested, network traffic is reduced. If the whole file is transmitted, the PC would then perform the query itself, reducing the efficiency of both network and PC. In the 1980s, at least 100,000 LANs were set up in laboratories and offices around the world. During the early part of this decade, synchronous orbit satellites lowered the price of long distance telephone calls, enabling computer data and television signals to be distributed more cheaply around the world. Since then, fibre optic cable has been installed on a large scale, enabling vast amount of data to be transmitted at a very high speed using light signals. Global communication and computer networks become a part of professional and personal lives as the price of microcomputers and network access drops.

(22) Online payment system

In the age of the Internet and busy schedules, more people are finding it more convenient to do their shopping and banking online. Nowadays, people are working longer hours and are too busy with other activities to be able to fit time to travel to the local shopping center. Instead they can go straight home from work and with a few clicks of the mouse, have a package ready to ship to their front door. The Internet now comes first before the importance

of the television and telephone. Playing an important part in people's lives, the computer is the fastest way to communicate, bank and shop. Many online consumers are using debit and credit cards to pay for their purchases, while other methods such as e wallets, Paypal, mobile and other wireless transactions are following close behind. 64 The Federal Trade Commission (FTC) wants all online consumers to be well informed about the new payment technologies and how the consumers can make their online transactions as secure and safe as possible. Although it's impossible to control the fraud and deception on the Internet, the FTC encourages all online consumers to the necessary steps to ensure the security of your personal information and all other online transactions. As an online consumer, it's up to you, and only you, to protect yourself from theft. Here are three ways to make sure that your online credit card transactions are safe. Use a secure web browser. Using software that encrypts online purchase information will help to secure your transactions. Make sure that your web browser is updated on its encryption capabilities. You can ensure this update by using the latest version of encryption software from the manufacturers. Some web browsers offer free downloads over the Internet. While submitting your information, be sure to look for the icon «lock» in the web browsers status bar. This will ensure your information is secure during the transmission. Read before you write. Never provide any personal information to any website before first checking with the website's privacy policy. This way you can be aware if your information will be shared or used in a way with other online merchants. You will also want to know exactly what security features are established so your personal information cannot be acquired fraudulently. You should be able to understand the privacy, shipping and refund policy before you provide any information or make a purchase. if after reading the privacy policy, you are not comfortable, then you may want to consider taking your business elsewhere. Review all the financial statements. Always review your bank and credit card statements and look for any unauthorized purchases or errors. Statements can be fairly confusing to look over, but take your time and be thorough, if you notice anything questionable, contact your bank or credit card company immediately. You should also contact these financial institutions if your purse or wallet is lost or stolen, or even if you think there are unauthorized uses of your accounts. Always keep records of 65 your online transactions and read all your e-mails from those merchants you have made purchases from. Those merchants may be sending you important information about your purchase or account

(23) Microsoft Windows

Microsoft Windows (or simply Windows) is a software program that makes your PC easy to use. It does this by simplifying the computer's user interface. The word interface refers to the way you give your computer commands, the way you interact with it. Usually the interface between you and the computer consists of the screen and the keyboard, you interact with the computer by responding to what's on the screen, typing in commands at the DOS command line to you work. DOS often isn't very intelligent at interpreting your commands and most people consider it awkward or intimidating as a user interface. These commands can be confusing and difficult to remember. Who wants to learn a lot of computer commands just to see what's on your disk, copy a file, or format a disk? Windows changes much of these. With Windows, you can run programs, enter and move data around, and perform DOS-related tasks simply by using the mouse to point at objects on the screen. Of course, you also use the keyboard to type in letters and numbers. Years of research went into developing the prototype of today's popular graphical user interface. It was shown in the early 1980s that the graphical user interface, in conjunction with a hand-held pointing device (now called the 76 mouse), was much easier to operate and understand than the older-style keyboard-command approach to controlling a computer. Windows interprets your actions and tells DOS and your computer

what to do. In addition to making DOS housekeeping tasks such as creating directories, copying files, deleting files, formatting disks, and so forth, easier, Windows makes running your favorite applications easier, too. Windows owes its name to the fact that it runs each program or document in its own separate window (a box or frame on the screen). You can have numerous windows in the screen at a time, each containing its own program and/or document. You can then easily switch between programs without having to close one down and open the next. Another feature is that Windows has a facility – called the Clipboard – that lets you copy material between dissimilar document types, making it easier to cut and paste information from a spreadsheet into a company report or put a scanned photograph into a real estate brochure. In essence, Windows provides the means for seamlessly joining the capabilities of very different application programs. Not only can you paste portions of one document into another, but by utilizing more advanced document-linking features those pasted elements remain «live». That is, if the source document (such as some spreadsheet data) changes, the results will also be reflected in the secondary document containing the pasted data. As more and more application programs are written to run with Windows, it'll be easier for anyone to learn how to use new programs. This is because all application programs that run in Windows use similar commands and procedures. Windows comes supplied with a few of its own handy programs. There's a word-processing program called Write, a drawing program called Paintbrush, a communication program called Terminal for connecting to outside information services over phone lines, small utility programs that are helpful for keeping track of appointments and notes, a couple of games to help you escape from your work, and a few others .

(24) Programming languages

The only language computers can understand directly is called machine code. It is known to consist of the 1s and 0s (binary code) that are processed by the CPU. However, machine code as a means of communication is very difficult to write. That is why it is necessary to use symbolic languages that are easier to understand. Then, by using a special program, these languages can be translated into machine code. Basic languages, in which the program is similar to the machine code version, are known as low-level languages. In these languages each instruction is equivalent to a single machine code instruction and the program is converted into machine code by a special program called an 81 assembler. These languages are considered to be still quite complex and restricted to particular computers. To make the program easier to write and to overcome the problem of intercommunication between different types of machines, higher-level languages were developed such as BASIC, Pascal, C and others. A higher-level language is a problem oriented programming language, whereas a low-level language is machine oriented. This means that a high level language is a convenient and simple means of describing the information structures and sequences of actions to be performed for a particular task. A high-level language is independent of the architecture of the computer which supports it. This has two advantages. Firstly, the person writing the program does not have to know anything about the computer the program will be run on. Secondly, programs are portable, that is, the same program can (in theory) be run on different types of computers. Programs written in one of these languages should be converted by means of a compiler into a lower-level language or machine code so that the CPU could understand it. C, a high-level programming language, seems to be very popular today because it is small, so it is not too hard to learn, it is very efficient and portable so one can use it with all kinds of computers. A lot of software engineers use C to write commercial applications programs for mini, micro and personal computers. There are also various versions of C, such as C++ and Objective C, which represent a new style of programming. At present there is a

tendency towards an even higher level of programming languages, which might be called specification languages, and an increasing use of software development tools. People communicate instructions to the computer in symbolic languages and the easier this communication can be made, the wider the application of computers will be. Scientists are reported to be already working on. Artificial intelligence and the next generation of computers may be able to understand human languages

(25) Dynamics

Physics is the study of dynamics. Dynamics is the description of the actual forces of nature that, we believe, underlie the causal structure of the Universe and are responsible for its evolution in time. We are about to embark upon the intensive study of a simple description of nature that introduces the concept of a force, due to Isaac Newton. A force is considered to be the causal agent that produces the effect of acceleration in any massive object, altering its dynamic state of motion. Newton was not the first person to attempt to describe the underlying nature of causality. Many, many others, including my favorite ‘dumb philosopher’, Aristotle, had attempted this. The major difference between Newton’s attempt and previous ones is that Newton did not frame his as a philosophical postulate per se. Instead he formulated it as a mathematical theory and proposed a set of laws that (he hoped) precisely described the regularities of motion in nature. In physics a law is the equivalent of a postulated axiom in mathematics. That is, a physical law is, like an axiom, an assumption about how nature operates that not formally provable by any means, including experience, within the theory. A physical law is thus not considered “correct” – rather we ascribe to it a “degree of belief” based on how well and consistently it describes nature in experiments designed to verify and falsify its correspondence. It is important to do both. Again, interested students are encouraged to look up Karl Popper’s “Falsifiability”²⁹ and the older Postivism³⁰. A hypothesis must successfully withstand the test of repeated, reproducible experiments that both seek to disprove it and to verify that it has predictive value in order to survive and become plausible. And even then, it could be wrong! If a set of laws survive all the experimental tests we can think up and subject it to we consider it likely that it is a good approximation to the true laws of nature; if it passes many tests but then fails others (often failing consistently at some length or time scale) then we may continue to call the postulates laws (applicable within the appropriate milieu) but recognize that they are only approximately true and that they are superseded by some more fundamental laws that are closer (at least) to being the “true laws of nature”. Newton’s Laws, as it happens, are in this latter category – early postulates of physics that worked remarkably well up to a point (in a certain “classical” regime) and then failed. They are “exact” (for all practical purposes) for massive, large objects moving slowly compared to the speed of light³¹ for long times such as those we encounter in the everyday world of human experience (as described by SI scale units). They fail badly (as a basis for prediction) for microscopic phenomena involving short distances, small times and masses, for very strong forces, and for the laboratory description of phenomena occurring at relativistic velocities. Nevertheless, even here they survive in a distorted but still recognizable form, and the constructs they introduce to help us study dynamics still survive. Interestingly, Newton’s laws lead us to second order differential equations, and even quantum mechanics appears to be based on differential equations of second order or less. Third order and higher systems of differential equations seem to have potential problems with temporal causality (where effects always follow, or are at worst simultaneous with, their causes in time); it is part of the genius of Newton’s description that it precisely and sufficiently allows for a full description of causal phenomena, even where the details of that causality turn out to be incorrect

4. Методические материалы, определяющие процедуры оценивания знаний, умений, навыков и (или) опыта деятельности, характеризующих этапы формирования компетенций

Основными формами текущего контроля являются: выполнение лексико-грамматических упражнений, тестирование, проект (защита презентации), аннотация, деловое письмо, устный ответ, текст с социокультурной и профессионально-ориентированной направленностью.

Максимальное количество баллов, которое может набрать магистрант в течение семестра за текущий контроль, равняется 80/70 баллам.

Максимальная сумма баллов, которые бакалавр может получить на зачёте, равняется 20 баллам.

Максимальная сумма баллов, которые бакалавр может получить на экзамене, равняется 30 баллам

Зачет и экзамен проводится по результатам выполнения всех видов учебной работы, предусмотренных рабочей программой дисциплины, при этом учитываются результаты текущего контроля успеваемости в течение семестра.

Формой промежуточной аттестации является экзамен, который проходит в форме устного собеседования по вопросам.

Зачёт может проводиться по билетам. Вопросы охватывают все содержание программы учебной дисциплины. Зачёт состоит из двух вопросов.

За семестр студент может набрать максимально 100 баллов.

Содержание зачета (1 семестр 80 баллов текущий контроль, 20 баллов зачет)

1. Чтение и перевод фрагмента текста социокультурной направленности, понимание которого проверяется в форме беседы по содержанию. (10 баллов)

2. Беседа по одной из пройденных тем. (10 баллов)

2.Содержание зачета (II семестр (80 баллов — учебный процесс, 20 баллов — зачет)

1. Чтение и написание аннотации к тексту социокультурной направленности. (10 баллов)

2. Устное монологическое высказывание на одну из изученных тем. (10 баллов)

3.Содержание экзамена (III семестр (70 баллов — учебный процесс, 30 баллов — экзамен)

- 1) Чтение и беседа по тексту социокультурной направленности. (10 баллов)
- 2) Написание аннотации по тексту профессиональной направленности. (10 баллов)
- 3) Беседа по одной из пройденных тем. (10 баллов)

Шкала оценивания зачета

Баллы	Критерии оценивания
20	<p>Студент демонстрирует отличное знание предмета (сформированность умений и навыков иноязычного общения в 4-х сферах коммуникации: повседневно-бытовой, учебно-образовательной, социокультурной и профессиональной):</p> <ul style="list-style-type: none"> • произношение соответствует программным требованиям; адекватно использует ритмику и мелодику иноязычной речи для выражения своих коммуникативных намерений. • умеет работать с текстами разных типов, полно и точно передает содержание. Логично и последовательно выражает свои мысли. Речь отличается разнообразием языковых средств и точностью их употребления. • при составлении письменной аннотации к прочитанному тексту, передает содержание в точности, соблюдает смысловую связанность и целостность изложения. • способен вести беседу в соответствии с коммуникативной задачей. Умеет точно формулировать свои мысли и выражать свое мнение. Владеет умением спонтанно реагировать на изменения речевого поведения партнера. Владеет техникой ведения беседы: может дать информацию, расспросить, выразить свое видение проблемы, использует в речи сложные грамматические конструкции (в рамках программы) и демонстрирует большой словарный запас.
16	<p>Студент демонстрирует хорошее знание предмета:</p> <ul style="list-style-type: none"> • произношение в целом соответствует программным требованиям, но встречаются случаи отклонения от нормы. В основном умеет использовать ритмику, мелодику иноязычной речи, хотя иногда речь может быть недостаточно выразительной; • демонстрирует полное понимание текста, речевые высказывания состоят из простых предложений; • владеет навыками письменной речи. • способен вести беседу в соответствии с коммуникативной задачей, излагая не только факты, но и свое личное мнение. Владеет техникой ведения беседы, но не всегда может спонтанно отреагировать на речевое

	поведение партнера. Может допускать коммуникативно незначимые грамматические ошибки. Демонстрирует словарный запас в рамках программы.
10	<p>Студент демонстрирует отдельные речевые навыки и умения:</p> <ul style="list-style-type: none"> • делает ошибки в произношении и речевой интонации; • не совсем верно понимает содержание текста. Пересказ состоит из крайне простых предложений, при этом допускаются грамматические ошибки; • при составлении аннотации к тексту допускает грубые ошибки в понимании содержания и письменной речи. • может участвовать в беседе, используя упрощенные лексико-грамматические структуры для выражения своих мыслей. Реагирует на вопросы собеседника. Часто при ответах на вопросы использует заученный текст. Обладает ограниченным лексическим запасом.
6	<p>Студент демонстрирует отсутствие сформированности умений и навыков иноязычного общения:</p> <ul style="list-style-type: none"> • при частичном понимании текста не может передать его содержание. Отвечает лишь на простые вопросы, при этом допускает грамматические и синтаксические ошибки; <p>не способен вести беседу. При ответах на вопросы использует заученные фрагменты тем. Не владеет достаточным количеством устойчивых фраз и выражений для ведения беседы. Не умеет адекватно реагировать на вопросы собеседника. Владеет минимальным запасом лексики, но не умеет его использовать</p>

Итоговая шкала оценивания результатов освоения дисциплины

Итоговая оценка по дисциплине выставляется по приведенной ниже шкале. При выставлении итоговой оценки преподавателем учитывается работа обучающегося в течение освоения дисциплины, а также оценка по промежуточной аттестации

Баллы, полученные по текущему контролю и промежуточной аттестации	Оценка в традиционной системе
81-100	зачтено
61-80	зачтено

41-60	зачтено
0-40	не зачтено

Шкала оценивания экзамена

Баллы	Критерии оценивания
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Баллы, полученные по текущему контролю и промежуточной аттестации	Оценка в традиционной системе
81-100	отлично
61-80	хорошо
41-60	удовлетворительно
0-40	не удовлетворительно

