ПРИЛОЖЕНИЕ

**МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ**

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
**«Рязанский государственный радиотехнический университет имени В.Ф. Уткина»**

КАФЕДРА «Информационно-измерительная и биомедицинская техника»

# ОЦЕНОЧНЫЕ МАТЕРИАЛЫ
## «Иностранный язык»

Специальность

12.03.04. Биотехнические системы и технологии

Квалификация выпускника – бакалавр

Форма обучения — очная

Рязань
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## 1. ОБЩИЕ ПОЛОЖЕНИЯ

Оценочные материалы – это совокупность учебно-методических материалов (контрольных заданий, описаний форм и процедур проверки), предназначенных для оценки качества освоения обучающимися данной дисциплины как части ОПОП.

Цель – оценить соответствие знаний, умений и владений, приобретенных обучающимся в процессе изучения дисциплины, целям и требованиям ОПОП в ходе проведения текущего контроля и промежуточной аттестации.

Основная задача – обеспечить оценку уровня сформированности универсальных, общепрофессиональных и профессиональных компетенций.

Контроль знаний обучающихся проводится в форме текущего контроля и промежуточной аттестации.

Текущий контроль успеваемости проводится с целью определения степени усвоения учебного материала, своевременного выявления и устранения недостатков в подготовке обучающихся и принятия необходимых мер по совершенствованию методики преподавания учебной дисциплины, организации работы обучающихся в ходе учебных занятий и самостоятельной работы, оказания им индивидуальной помощи.

К контролю текущей успеваемости относится проверка обучающихся:

- на практических занятиях путем проведения текущего тестирования;
- по результатам выполнения заданий на практических занятиях;
- по результатам выполнения заданий для самостоятельной работы.

Промежуточный контроль в форме экзамена (4 семестр) представляет собой письменный и устный ответ по утвержденным экзаменационным билетам, сформулированным с учетом содержания учебной дисциплины. В экзаменационный билет включаются три практических задания и беседа на заданную тему.

При оценивании результатов освоения дисциплины для экзамена применяется система оценивания по шкале «зачтено / не зачтено», «отлично», «хорошо», «удовлетворительно», «неудовлетворительно».

## 2. ОПИСАНИЕ ПОКАЗАТЕЛЕЙ И КРИТЕРИЕВ ОЦЕНИВАНИЯ КОМПЕТЕНЦИЙ

Сформированность каждой компетенции (или ее части) в рамках освоения данной дисциплины оценивается по трехуровневой шкале:

1) пороговый уровень является обязательным для всех обучающихся по завершении освоения дисциплины;
2) продвинутый уровень характеризуется превышением минимальных характеристик сформированности компетенций по завершении освоения дисциплины;
3) эталонный уровень характеризуется максимально возможной выраженностью компетенций и является важным качественным ориентиром для самосовершенствования.

По дисциплине «Иностранный язык» предусмотрена традиционная система оценки результатов обучения. Критерии оценки по дисциплине зависят от результатов текущей и промежуточной аттестации студента. Итоговый балл

студента определяется путем суммирования оценок, полученных студентом на всех аттестациях, проводимых в течение семестра согласно учебному графику.

## 3. ПАСПОРТ ОЦЕНОЧНЫХ МАТЕРИАЛОВ ПО ДИСЦИПЛИНЕ

| Контролируемые разделы (темы) дисциплины | Код контролируемой компетенции (или её части) | Вид, метод, форма оценочного мероприятия |
|---|---|---|
| 1. Introduction to General Scientific Lexis (Введение в общенаучную лексику) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 2. Ryazan State Radio Engineering University (Рязанский государственный радиотехнический университет) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 3. Nature of Engineering (Природа инженерного дела) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 4. History of Engineering (История инженерного дела) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 5. Fields of Engineering (Области инженерного дела) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 6. My Future Profession is an Engineer (Моя будущая профессия - инженер) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 7. Famous Engineers (Известные инженеры) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 8. 20$^{th}$ Century Greatest Engineering Achievements (Величайшие технические достижения 20-го века) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 9. Future of Engineering (Будущее инженерного дела) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 10. Engineering Ethics (Этика инженерного дела) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 11. Engineering Design (Инженерное проектирование) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 12. Engineering Drawings (Инженерные чертежи) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 13. Language of Numbers (Язык чисел) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |

| | | |
|---|---|---|
| 14. Use of Computers in Engineering (Использование компьютеров в инженерии) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 15. Maintenance and Improvement (Техническая поддержка и совершенствование) | УК-4 | Ответы на практические, творческие и тестовые задания, зачет |
| 16. Professionally Oriented Translation (Профессионально-ориентированный перевод) | УК-4 | Ответы на практические, творческие и тестовые задания, экзамен |

## 4. ФОРМЫ ТЕКУЩЕГО КОНТРОЛЯ

Текущий контроль успеваемости проводится с целью определения степени усвоения учебного материала, своевременного выявления и устранения недостатков в подготовке обучающихся и принятия необходимых мер по совершенствованию методики преподавания учебной дисциплины, организации работы обучающихся в ходе учебных занятий и оказания им индивидуальной помощи.

К контролю текущей успеваемости относятся проверка знаний, умений и навыков обучающихся: на занятиях, по результатам выполнения обучающимися индивидуальных заданий, проверки качества подготовки к практическим занятиям и иных материалов.

Текущий контроль по дисциплине «Иностранный язык» осуществляется в течение семестра в устной и письменной форме в виде контрольных и тестовых работ, устных опросов, творческих заданий и проектов.

## 5. ФОРМЫ ПРОМЕЖУТОЧНОГО КОНТРОЛЯ

Формами промежуточного контроля по дисциплине являются зачет (1, 2, 3 семестр) и экзамен (4 семестр). Форма проведения экзамена – устный и письменный ответ по утвержденным экзаменационным билетам, сформулированным с учетом содержания учебной дисциплины. Объектом контроля являются коммуникативные умения во всех видах речевой деятельности (аудирование, говорение, чтение, письмо), ограниченные тематикой и проблематикой изучаемых разделов курса.

## 6. ТИПОВЫЕ КОНТРОЛЬНЫЕ ВОПРОСЫ (ЗАДАНИЯ) И КРИТЕРИИ ОЦЕНКИ

**6.1. Зачет.**

**а) типовые вопросы (задания)**

**Вопрос 1. Проверка знания грамматики (в форме тестирования) по пройденным грамматическим темам.**

**“Non-Finite Forms of the Verb”**
**Grammar Test**

*1. Choose the correct answer.*

1) I'd prefer **going/to go/go** travelling in Europe this summer.

2) Do you remember **meeting/to meet/meet** Julia last year?
3) We stopped at the side of the road **looking/to look/look** at the view.
4) You should **seeing/to see/see** the dentist as soon as possible.
5) Don't forget **bringing/to bring/bring** the passport!
6) They'd rather **buying/to buy/buy** souvenirs later.
7) He apologized for not **calling/to call/call** me for so long.
8) Mum really made me **crying/to cry/cry** with her story.
9) She wanted all her children **obeying/to obey/obey** the rules.

2. *Underline the mistakes and correct the wrong word or phrase. Tick (V) the correct sentence(s).*

1) I'm really looking forward to go ice-skating tomorrow. _____
2) Sean's decided taking up skateboarding. _____
3) I adore going to outdoor cinemas in the summer. _____
4) Did you remember buying the tickets for the show? _____
5) I don't really feel like seeing a film tonight. _____
6) She ought to stop complaining all the time. _____
7) The music was great – we didn't stop to dance all night. _____

3. *Fill in gaps using the correct form of the verb from the list.*

be (x2), draw (x2), go, join, learn, paint, see, study, try, visit

**Spare Time**

Although I enjoy (1)_____ art galleries, I've never been very good at (2)_____ and I can't (3)_____ pictures myself. For a long time I've wanted (4)_____ some of the basic skills. At first, I considered (5)_____ on my own at home, but then a friend of mine suggested (6)_____ to evening classes and I realised that would be much more fun. So, I've decided (7)_____ an evening art class at the local Art college. I've met the instructor, Mr Phillips, and he seems (8)_____ really helpful. First, we'll practise (9)_____ very simple objects, and then we're going to move on to more difficult things, like people and buildings. I know it's not going (10)_____ easy, but I'm not going to give up (11)_____. And I hope by the end of the course I'll be able (12)_____ a real improvement in my artistic ability.

**Вопрос 2. Проверка знания лексики по пройденным темам.**

*Make up correct collocations choosing an appropriate verb for each noun. In some cases more than one verb is possible.*

do, make, conduct, carry out, suggest, undertake

1) discovery
2) experiment
3) observation
4) research
5) hypothesis

6) investigation
7) invention
8) breakthrough
9) model
10) theory

**Вопрос 3. Беседа по пройденным темам.**

Write an essay on the topic “My Future Profession is an Engineer”. You should write at least 250 words. And present your report in look up and say manner.

**Вопрос 4. Выполнение письменных работ в рамках пройденных модулей.**

*1) Read the text “History of Engineering”*

**History of Engineering**

The history of Engineering is part and parcel of the history of human civilization. Most of the broader history of civilization, of economic and social relations, is also the history of engineering, engineering applications and innovation. The Stone Age, Bronze Age, Iron Age, Steam Age and Information Age all relate to engineering and innovations shaping our interaction with the world.

The history of engineering as a profession began with tool- and weapon-making over 150,000 years ago – indicating that engineering is one of the oldest professions.

Engineering professionalization continued with the development of craft and knowledge, and the formalization of associated knowledge and education.

Simple forms of engineering education existing in ancient societies developed into vocational technical schools of different types in the Middle Ages particularly during the Renaissance and the Scientific revolution of the sixteenth and seventeenth centuries.

Engineering powered the so-called Industrial Revolution that really took off in the United Kingdom in the eighteenth century spreading to Europe, North America and the world.

The first Industrial Revolution took place from 1750 – 1850 and focused on the textile industry. The second Industrial Revolution focused on steam and the railways from 1850 – 1900 and the third Industrial Revolution was based on steel, electricity and heavy engineering from 1875 – 1925. This was followed by the fourth Industrial Revolution based on oil, the automobile and mass production, taking place between 1900 – 1950 and onward, and the fifth phase was connected with information and telecommunications and the post-war boom from 1950. The sixth wave was founded on new knowledge production and application in such fields as IT, biotechnology and materials beginning around 1980, and the seventh wave was associated with ‘green’ engineering and technology seen to have begun around 2005.

Today, much of the world’s population lives in engineered environments. Most of us are surrounded by technological devices that dramatically affect how we live our lives. We live in houses whose structural, electrical, plumbing and communications systems have been designed by engineers. We travel in cars, trucks, trains, and airplanes; we communicate with each other using televisions, computers, telephones and cell phones. Engineers have played a key role in the development of all these devices.

*2) Complete the table with the missing information.*

| Years | Events |
|---|---|
| 150,000 | |
| 1750 – 1850 | |
| 1875 – 1925 | |
| 1900 – 1950 | |
| 1950 | |
| 1980 | |
| 2005 | |

*3) Complete the sentences as in the text.*

1. The history of engineering is…
2. … is also the history of engineering, engineering applications and innovation.
3. The history of engineering as a profession began with…
4. Engineering professionalization continued with…
5. … powered the so-called Industrial Revolution.
6. Today, much of the world's population lives in…
7. Most of us are surrounded by…
8. …have played a key role in the development of all these devices.

**Вопрос 5. Перевод со словарем. Предлагается для перевода текст объемом 1200 знаков технической направленности. На подготовку дается 40 минут. Разрешается использование словаря при подготовке.**

## Transformation of Engineering Education

Engineering education is a foundation for the development of society. Without technological innovations, there will be no production of new goods, no economic growth and no human development.

This creates a lot of challenges for engineering education:

- Knowledge might be outdated within a few years.
- Innovation is no longer based on individual knowledge but on collaborative knowledge that is getting more and more complex.
- This fast technological development must be made much more sustainable.

These new challenges have helped to formulate requirements for skills that go far beyond technical knowledge.

Some of the skills are:

- an ability to function on multi-disciplinary teams;
- an ability to identify and solve applied science problems;
- an understanding of professional and ethical responsibility;
- an ability to communicate effectively;
- the broad education necessary to understand the impact of solutions in a global and societal context;
- a recognition of the need for, an and ability to engage in life-long learning;

- a knowledge of contemporary issues;
- an ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice.

**б) критерии оценки на зачете:**

«Зачтено» ставится в тех случаях, когда студент выполняет тесты на 60 и более процентов, выполняет письменные работы в рамках предложенных модулей, отвечает на вопросы к зачету точно, или близко к точному ответу, отвечает на дополнительные вопросы преподавателя, переводит предложенный текст близко к оригиналу.

«Не зачтено» ставится в том случае, если студент выполняет тесты на менее чем 60 процентов, не выполняет письменные работы в рамках предложенных модулей, не отвечает на вопросы к зачету или затрудняется отвечать на основные и дополнительные вопросы, показывает отрывочные знания, затрудняется с переводом предложенного текста.

**6.2. Экзамен.**

**а) типовые вопросы (задания)**

Экзамен по дисциплине «Иностранный язык» состоит из 4 испытаний.

**Вопрос 1. Реферирование.**

**Предлагается текст объемом 5000 печатных знаков, который необходимо прочитать, понять и изложить суть на русском языке с обязательным анализом и указанием своего мнения. На подготовку дается 2 академических часа.**

## TRANSISTOR

A transistor is a semiconductor device used to amplify or switch electronic signals and electrical power. It is composed of semiconductor material usually with at least three terminals for connection to an external circuit. A voltage or current applied to one pair of the transistor's terminals controls the current through another pair of terminals. Because the controlled (output) power can be higher than the controlling (input) power, a transistor can amplify a signal. Today, some transistors are packaged individually, but many more are found embedded in integrated circuits.

The transistor is the fundamental building block of modern electronic devices, and is ubiquitous in modern electronic systems.

**Importance**

The transistor is the key active component in practically all modern electronics. Many consider it to be one of the greatest inventions of the 20th century. Its importance in today's society rests on its ability to be mass-produced using a highly automated process (semiconductor device fabrication) that achieves astonishingly low per-transistor costs.

**Usage**

The bipolar junction transistor, or BJT, was the most commonly used transistor in the 1960s and 70s. Even after MOSFETs became widely available, the BJT remained the transistor of choice for many analog circuits such as simple amplifiers

because of their greater linearity and ease of manufacture. Desirable properties of MOSFETs, such as their utility in low-power devices, usually in the CMOS configuration, allowed them to capture nearly all market share for digital circuits; more recently MOSFETs have captured most analog and power applications as well, including modern clocked analog circuits, voltage regulators, amplifiers, power transmitters, motor drivers, etc.

**Simplified operation**

The essential usefulness of a transistor comes from its ability to use a small signal applied between one pair of its terminals to control a much larger signal at another pair of terminals. This property is called gain. It can produce a stronger output signal, a voltage or current, which is proportional to a weaker input signal; that is, it can act as an amplifier. Alternatively, the transistor can be used to turn current on or off in a circuit as an electrically controlled switch, where the amount of current is determined by other circuit elements.

There are two types of transistors, which have slight differences in how they are used in a circuit. A bipolar transistor has terminals labeled base, collector, and emitter. A small current at the base terminal (that is, flowing between the base and the emitter) can control or switch a much larger current between the collector and emitter terminals. For a field-effect transistor, the terminals are labeled gate, source, and drain, and a voltage at the gate can control a current between source and drain.

The image represents a typical bipolar transistor in a circuit. Charge will flow between emitter and collector terminals depending on the current in the base. Because internally the base and emitter connections behave like a semiconductor diode, a voltage drop develops between base and emitter while the base current exists. The amount of this voltage depends on the material the transistor is made from, and is referred to as VBE.

**Transistor as an amplifier**

The common-emitter amplifier is designed so that a small change in voltage (Vin) changes the small current through the base of the transistor; the transistor's current amplification combined with the properties of the circuit means that small swings in Vin produce large changes in Vout.

Various configurations of single transistor amplifier are possible, with some providing current gain, some voltage gain, and some both.

From mobile phones to televisions, vast numbers of products include amplifiers for sound reproduction, radio transmission, and signal processing. The first discrete-transistor audio amplifiers barely supplied a few hundred milliwatts, but power and audio fidelity gradually increased as better transistors became available and amplifier architecture evolved.

Modern transistor audio amplifiers of up to a few hundred watts are common and relatively inexpensive.

**Comparison with vacuum tubes**

Before transistors were developed, vacuum (electron) tubes (or in the UK "thermionic valves" or just "valves") were the main active components in electronic equipment.

**Advantages:**

The key advantages that have allowed transistors to replace vacuum tubes in most applications are

1. Small size and minimal weight, allowing the development of miniaturized electronic devices.
2. Highly automated manufacturing processes, resulting in low per-unit cost.
3. Lower possible operating voltages, making transistors suitable for small, battery-powered applications.
4. No warm-up period for cathode heaters required after power application.
5. Lower power dissipation and generally greater energy efficiency.
6. Higher reliability and greater physical ruggedness.
7. Extremely long life. Some transistorized devices have been in service for more than 30 years.
8. Complementary devices available, facilitating the design of complementary-symmetry circuits, something not possible with vacuum tubes.
9. Insensivity to mechanical shock and vibration, thus avoiding the problem of microphonics in audio applications.

**Limitations:**

1. Silicon transistors do not operate at voltages higher than about 1,000 volts (SiC devices can be operated as high as 3,000 volts). In contrast, electron tubes have been developed that can be operated at tens of thousands of volts.
2. High-power, high-frequency operation, such as that used in over-the-air television broadcasting, is better achieved in vacuum tubes due to improved electron mobility in a vacuum.
3. Silicon transistors are much more sensitive than electron tubes to an electromagnetic pulse, such as generated by an atmospheric nuclear explosion.

**Вопрос 2. Перевод со словарем.**

**Предлагается для перевода текст объемом 1200 знаков технической направленности. На подготовку дается 40 минут. Разрешается использование словаря при подготовке.**

## Schottky Diode

The Schottky diode (named after German physicist Walter H. Schottky; also known as hot carrier diode) is a semiconductor diode with a low forward voltage drop and a very fast switching action. The cat's-whisker detectors used in the early days of wireless can be considered as primitive Schottky diodes.

A Schottky diode is a special type of diode with a very low forward-voltage drop. When current flows through a diode there is a small voltage drop across the diode terminals. A normal diode has between 0.7 – 1.7 volt drops, while a Schottky diode voltage drop is between approximately 0.15 – 0.45 – this lower voltage drop translates into higher system efficiency.

**Construction**

A Schottky diode uses a metal-semiconductor junction as a Schottky barrier (instead of a semiconductor-semiconductor junction as in conventional diodes). This Schottky barrier results in both very fast switching times and low forward voltage

drop.

**Silicon carbide Schottky diode**

Silicon carbide has a high thermal conductivity and temperature has little influence on its switching and thermal characteristics. With special packaging it is possible to have operating junction temperatures of over 500K, which allows passive radiation cooling in aerospace applications.

**Вопрос 3. Перевод без словаря.**

**Предлагается для перевода текст объемом 2000 знаков общенаучной направленности. На подготовку отводится 10 минут.**

## ELECTRICITY AND MAGNETISM

When the question is asked "what is electricity" the answer is often given that "no one knows". This all too frequent answer is far from being correct. Science knows a great deal about electricity. It is possible to explain its behaviour under numerous and varied conditions, to design electrical equipment like motors, generators, and transformers with great precision and efficiency, and to even say of what electricity is composed. This statement is not to be misinterpreted to mean that science knows everything about electricity. We still have much to learn.

A student usually starts to study electricity with electrostatics or "electricity at rest". First the theories of electrification by friction are given and the behaviour of an electroscope is explained. Then the properties of conductors and non-conductors of electricity according to the electron theory of matter are considered. Electrostatics deals mainly with charges.

The first quantitative measurements of the force between charged bodies were made by Coulomb, a French scientist and engineer, in 1780. He proved experimentally that the force acting between two charges is directly proportional to the product of the two charges and inversely proportional to the square of the distance between them.

Then the important concept – the electric field is discussed. The electric field is defined as the forces in the space around a charged body.

The student should be able to make diagrams illustrating the electric field and the lines of force in the neighbourhood of charged bodies, define capacity, name the essential elements of an electrical condenser, and its general purpose.

The magnetic field. In the space surrounding every magnet there exists what is called a magnetic field. Although this field cannot be seen, it can be demonstrated and mapped out or in other words the magnetic lines of force can be drawn, each line starting at some point near the N-pole and ending at a corresponding point near the S-pole.

These magnetic lines of force, as they are called, do not really exist; they are but useful devices that may be used in describing the many different magnetic phenomena.

**Вопрос 4. Беседа по пройденным темам.**

## Higher Education in Russia

Every student has to choose what to do after finishing school. 20% of pupils go to work, someone goes to college, but most of us want to have a good profession in future. That's why we go to university. Higher education in Russia is pretty good and developed.

In big towns you can have any profession you like. Pupils from small towns and villages can move here and go to any university. Of course for this you need to have good results at school and desire to continue education.

Today our students are welcome in European countries as well. Our doctors, programmers, engineers can go any country and find a job there.

In general after finishing school you go to university for another 5 years. Sometime it can be more and sometime less. Everything depends on the profession you have chosen. Last year of the university you have to pass the exams and write a thesis. Also last year you can have practice in a company or school and you can start to work independently. It's important to understand the job not only while you are at the university, but doing your duties. So you have specialist degree.

After 5 years you can go to work or continue education. Another 2-3 years will give you master degree. And the last step is highest professional training where you can do researching.

Also our students like to have second education. It's convenient if you are not sure about your profession.

Today higher education is important, but more important if you really have skills, patience and experience. Higher education in our country can be free, but most of the students have to pay. Anyway a right to have higher education has every single pupil. Everything depends only on us and our desires.

**б) критерии оценивания компетенций (результатов)**

1) Уровень усвоения материала, предусмотренного программой.

2) Умение анализировать материал, устанавливать причинно-следственные связи.

3) Ответы на вопросы: полнота, аргументированность, убежденность, умение.

4) Качество ответа (его общая композиция, логичность, убежденность, общая эрудиция).

5) Использование дополнительной литературы при подготовке ответов.

**в) шкала оценивания для оформления итоговой оценки по дисциплине**

| Оценка | Определение оценки |
|---|---|
| Отлично | Отличное понимание предмета, всесторонние знания, отличные умения и владения. |

| | |
|---|---|
| Хорошо | Достаточно полное понимание предмета, хорошие знания, умения и владения. |
| Удовлетворительно | Приемлемое понимание предмета, удовлетворительные знания, умения и владения. |
| Неудовлетворительно | Результаты обучения не соответствуют минимальным требованиям. |

Составил:
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Оператор ЭДО ООО "Компания "Тензор"

ДОКУМЕНТ ПОДПИСАН ЭЛЕКТРОННОЙ ПОДПИСЬЮ

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| | **ФГБОУ ВО "РГРТУ", РГРТУ,** Есенина Наталья Евгеньевна, Директор | **19.10.26** 12:43 (MSK) | Простая подпись |
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