Приложение Г

Министерство науки
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ОЦЕНОЧНЫЕ И МЕТОДИЧЕСКИЕ МАТЕРИАЛЫ ДЛЯ КОНТРОЛЯ ОСВОЕНИЯ РЕЗУЛЬТАТОВ ОБУЧЕНИЯ ДОПОЛНИТЕЛЬНОЙ ОБРАЗОВАТЕЛЬНОЙ ПРОГРАММЫ

повышения квалификации
«Английский язык для академического и научного взаимодействия среди специалистов технического профиля»,

Текущий контроль

Текущий контроль проводится в соответствии с характеристиками контрольных заданий и представлен в табл. 1.

Таблица 1

Характеристика заданий текущего контроля

Наименование дисциплины (модуля)	Форма контроля/ наименование контрольной точки	Пример задания	Критерии оценки
Иностранный язык			
Основы фонетики английского языка	Контрольная работа	Прослушайте текст и запишите его. One sunny afternoon, a boy named Robert was playing outside with his friends. The sun was very bright and hot. Robert and his friends were sweating. They wanted something cold to eat. What can we buy that is cold and delicious? Asked Robert. Ice cream, said one friend. Great idea, said Robert. Finally, when the ice cream truck came down the street, the boys were able to get a cold, delicious treat. They smiled and enjoyed their ice cream.	*Оценка:* зачтено *Описание характеристики выполнения знания:*
Грамматический строй современного английского	Тестирование	Выберите правильный вариант ответа. 1. By the time we came, our friends _____ away the table.	*Оценка:* зачтено *Описание характеристи*

языка		a) have already taken b) already took c) had already taken 2. This piece of music (to know) to the audience. But it never (to play) so wonderfully. a) is known, has never been played b) knows, has never been played c) is known, has never played 3. When Tracy and Steve _____ in they _____ round the table. Mr. and Mrs. Gibbs _____ TV, Molly _____ and the others _____. a) came, were sitting, were watching, was writing, were reading b) come, sat, watched, wrote, read c) came, were sitting, was watching, was writing, was reading 4. Are you going to make a cake _____ have you already made it? a) because b) or c) but 5. The morning was beautiful today but the weather became (bad) by the evening than it was in the morning. a) worse b) the worst c) bad 6. ___ Statue of Liberty was given as ___ present by ___ people of ___ France to ___ people of ___ United States. a) a, a, the, __, the, the b) the, a, the, __, the, __ c) the, a, the, __, the, the 7. If my grandparents had locked up the chickens at night, the fox (not to eat) them. a) would not have eaten b) had not eaten c) would not eat 8. The guests were shown a lot of interesting pictures at this gallery. a) В этой галерее гости показывали много интересных картин. b) В этой галерее гостям показали много интересных картин. c) В этой галерее гости показали много интересных картин. 9. "_____! You're stepping on my foot." a) Yuk b) Yum c) Ouch 10. Are you going swimming _____ lunchtime?	*ки выполнения знания:*

		a) in b) at c) on	
Синтаксис английского языка	Тестирование	Выберите правильный вариант ответа. 1. been meeting not week has there a club the at this . a) There has been not a meeting at the club this week. b) There not has been a meeting at the club this week. c) There has not been a meeting at the club this week. 2. the, will, would, to, show, you, read, like, you, books? a) You will show the books you would like to read? b) Will you show the books you would like to read? c) Would you show the books you will like to read? 3. Your children never argue with you, _____? a) do they b) don't they c) do you 4. Don't tell him my secret, please. a) повествовательное предложение b) повелительное предложение c) вопросительное предложение 5. Has your grandmother made a cherry-pie or a banana cake? a) альтернативный вопрос b) расчлененный вопрос c) специальный вопрос 6. The girl asked her father "Don't say anything to my boyfriend". a) The girl asked her father not to say anything to her boyfriend. b) The girl asked her father don't say anything to her boyfriend. c) The girl asked her father not to say anything to my boyfriend. 7. table not do the dictionary the put on a) The dictionary do not put on the table. b) Not do put the dictionary on the table. c) Do not put the dictionary on the table. 8. week at ago him I the met cinema a a) I met him a week ago at the	*Оценка:* зачтено *Описание характеристики выполнения знания:*

		cinema. b) I met him a week ago at the cinema. c) I met him at the cinema a week ago. 9. Julia asked her husband: “Have you lost the money on horse-racing?” a) Julia asked her husband has he lost the money on horse-racing. b) Julia asked her husband if he had lost the money on horse-racing. c) Julia asked her husband if you had lost the money on horse-racing. 10. Alex bought a smart suit yesterday. a) простое предложение b) сложно-сочиненное предложение c) сложно-подчиненное предложение	
Иностранный язык			
Практическая фонетика английского языка	Контрольная работа	Write down what you hear. It’s 10 o’clock at night and Michelle is up stacking boxes of clothes in the corner of her room. As the rain falls outside, she wonders if she is making the right decision. Moving to a new home in a totally different country, where she will not know anyone, is going to be difficult. Not to mention, she only speaks a little bit of Chinese. Although that is true, she is still excited about starting her new job as an English teacher. She continues to pack all of her things, as she thinks about all the people she will be helping to learn English as a second language. Michelle goes to bed smiling and she now knows that is the right decision.	*Оценка:* зачтено *Описание характеристики выполнения знания:*
Грамматика английского языка. Теория. Практика	Тестирование	Выберите правильный ответ. 1. Two local residents were injured in___ crash last night involving ___ motorcycle and ___ car. ___ motorcyclist, Peter Johnson, ___ postman, skidded and hit ___side of ___ car being driven by Louise Mason. The emergency services were soon on ___scene and both were taken to ___ hospital, where they	*Оценка:* зачтено *Описание характеристики выполнения знания:*

		were treated for ___shock. a) a, a, a; the, a, the, the; the, -, - b) a, a, a; a, a, a, a; the, -, - c) -, -, -; the, a, the, the; the, -, - 2. Before the machine _____ tomorrow morning, it _____ for ten hours. a) is stopped, will have been working b) is stopped, will work c) was stopped, will have been working 3. In 2010, Kate _____ at a market in Paris when a modelling scout _____her, and against her parents' advice, 16-year-old Kate _____to become a model. a) was shopping, was approaching, decided b) shopped, was approaching, has decided c) was shopping, approached, decided 4. Watch out! You _____ that tray with dishes if you _____not careful! a) were going to drop, are b) are going to drop, are c) are going to drop, were 5. We _____ football for about an hour when it started to rain heavily. a) has been playing b) had been playing c) played 6. You have no chance of getting this job. You _____ your time if you apply for it. a) be wasting b) were wasting c) will be wasting 7. The ferry hit a rock and _____ quit quickly. Fortunately, all the sailors _____. a) sank, was rescued b) sinks, were rescued c) sank, were rescued 8. The data _____ by our team while the outcomes _____ by other specialists.	

		a) was being analyzed, were being learnt b) analyzed, were being learnt c) was being analyzed, learnt 9. This summer an extraordinary experiment in this field _____ out that worries many scientists today. a) had been carried b) has been carried c) has carried 10. He said that the construction of the new stadium _____by the end of the year. a) will have been finished b) will finish c) would have been finished 11. The global warming issues _____by the delegates at every conference connected with the environmental problems. a) are discussed b) is discussed c) discuss 12. Everyone comes together _____ Thanksgiving, which is _____ the 4th Thursday _____ November. a) at, in, in b) at, on, on c) at, on, in 13. How would you have felt if someone _____ you like that? a) would treated b) had treated c) would treat 14. If I could wave a magic wand and speak another language fluently I _____ Italian because it's one of my countries in the world. a) chose b) will choose c) would choose 15. If there is fuel shortage, the thermal power station _____to generate electricity. a) will not be able b) would not be able c) would not have been able 16. John, you seem … too fast. The speed is already 100 miles. I am	

		afraid. I want you … the speed till 40 miles. a) to be driving, to slow down b) to be driving, to be slowing down c) to drive, to slow down 17. The English colony, Plymouth, in Massachusetts, is known … by the Pilgrims who arrived on the Mayflower in 1620. a) to have established b) to have been established c) to have been establishing 18. Tom really appreciates … this opportunity. He'll do his best. a) giving b) having given c) being given 19. Our elder sister strongly objected to our … a fire in the forest. a) making b) being made c) having been made 20. Tests of the properties of the electromagnetic circuit _____ out by this team have shown good results. a) carrying b) carried c) having carried 21. The heat produced per second depends both upon the resistance of the conductor and upon the amount of current _____ through it. a) having flowed b) flowed c) flowing 22. Capacity is one of the important properties greatly _____ an electric circuit. a) affecting b) being affected c) having affected	
Особенности синтаксического строя английского языка	Тестирование	Выберите правильный ответ. 1. the / Who / you / introduce / to / person / first / was / motorcycling / to ? a) Who was the first person to introduce you to motorcycling? b) Who was the first person introduce to you to motorcycling?	*Оценка:* зачтено *Описание характеристики выполнения знания:*

		c) Who was the first person to introduce to you motorcycling? 2. Did the assistant show you to the office or to the conference room? a) разделительный b) специальный c) альтернативный 3. In five years Fiona will have become the CEO of the biggest corporation in Britain, won't she? a) специальный b) разделительный c) альтернативный 4. He said, "The buyers agree to accept the cargo on condition that it is not shipped before the 12th December." a) He said that the buyers agree to accept the cargo on condition that it is not shipped before the 12th December. b) He said if the buyers agreed to accept the cargo on condition that it was not shipped before the 12th December. c) He said that the buyers agreed to accept the cargo on condition that it was not shipped before the 12th December. 5. I asked him, "Can you find out how much overtime we will have to pay if the vessel is discharged at night time?" a) I asked him that if he could find out how much overtime we would have to t pay if the vessel was discharged at night time. b) I asked him that could he find out how much overtime we would have to t pay if the vessel was discharged at night time. c) I asked him if he could find out how much overtime we would have to t pay if the vessel was discharged at night time. 5. The Managing Director said to the secretary, "Don't forget to state in the letter that the offer is without obligation." a) The Managing Director said to the	

		secretary do not forget to state in the letter that the offer was without obligation. b) The Managing Director said to the secretary not to forget to state in the letter that the offer was without obligation. c) The Managing Director said to the secretary that not to forget to state in the letter that the offer was without obligation. 6. A public sale at which goods are sold to the highest bidder is called an auction. a) классифицирующее b) индивидуализирующее c) описательное 7. That is the only book by Galsworthy that he hasn't read. a) индивидуализирующее b) описательное c) классифицирующее	
Особенности перевода НТЛ	Контрольная работа	Write down the translation of what you hear. Welcome to this launch of our new product, a liquid aerial for mobile communications. Yes, you heard me correctly: I said 'liquid aerial'. Aerials are used everywhere, from mobile phones to satellite systems. And yet they are still made of materials such as copper, which break easily. In a war zone, or an emergency, broken aerials can kill. But now our research engineers have invented a new technology that gives an aerial two important properties. The first is resilience, **that is**, the ability to bend, but not break under pressure. And the second is a regenerative capability, **that is to say**, the ability to repair itself. These two properties prevent the aerial from breaking when it is subjected to deforming forces. **that is** forces which can change its shape. The four main forces that can deform a material are tension, **or** stretching, compression, **or** squeezing, torsion, **in other words**, a twisting force [pause] and finally impact, i.e. striking or hitting. To **put this in everyday terms**, you can't break it by striking it, pulling it, pressing on it or twisting it. **Another way of putting it is that** we have produced an aerial which bends without breaking, as a palm tree does in a hurricane. It's an aerial that can repair itself, just as human skin does. To understand this in more detail, let's look at what aerials are and what they do. Aerials transmit signals by using an oscillating electrical current in a length of conductive material to generate electromagnetic radiation. **To put that in everyday language**, this is what happens. An aerial is basically a rod made of a material, such as copper, which can conduct, or carry, electrical current. The current vibrates at a particular speed and the vibration sends out magnetic waves, known as radio waves. It's a bit like throwing a stone into a pool of water. The vibration of the stone hitting the water sends out waves in all directions. Or think of clapping your hands together and sending out sound waves.	*Оценка:* зачтено *Описание характеристики выполнения знания:*
Аннотирование и реферирование	Контрольная работа	Выберите статью и выполните по этой статье аннотирование и реферирование. Пример аннотации и реферата. **UML2OPC-UA – Transforming UML class diagrams to OPC UA information models** **Аннотация** This article focuses on innovations in	*Оценка:* зачтено *Описание характеристики выполнения знания:*

		the field of information technology and the production environment due to the advent of cyber-physical systems. The article gives the comments on the newly emerging requirements for the organization of production processes. According to the authors, the modernization of existing systems and the complication of new ones inevitably make the creation of seamless communication one of the main tasks. The study touches upon various communication standards applicable to this problem. The current problem is also relevant because the complexity of implementation and the specificity of data formats do not allow existing standards to reach their potential. The authors give experience of working with various information models, as well as communication protocols. Special attention is paid to the mapping of the used communication standards to each other. As an example, the researchers consider such a modeling standard as UML. The approach proposed by the authors of the article serves to overcome the existing difficulties by converting UML class diagrams to OPC-UA information models using ATL and the UML extension to ensure information-preserving transformations. This article will be useful to developers of information systems in the transition from theoretical developments to practical application. **Реферат** This synopsis is a short account of the article named « UML2OPC-UA – Transforming UML class diagrams to OPC UA information models». The article focuses on the general problem of transforming conventional production systems into cyber-physical production systems.	

		The main task is to integrate cyber-physical systems into production equipment. The authors comment that integration can take place using different technologies and standards. The article contains many comments about using the UML modeling system for mapping commands of various protocols. The article comprises four logical parts. In the first part of the article, it is noted that cyber-physical systems must have the property of self-organization in order to be able to communicate through networks. CPS needs to be aware of themselves and their communication partners. In the second part, the authors make a comparison. The authors note that they need a semantically rich description for these purposes. Emphasis is also placed on the unified architecture of OPC UA, which allows dissimilar systems to be connected in a standardized way at different factory levels. The second part describes the mandatory background, OPC UA and MDE, and some related work in this area. This section of the paper describes the so-called basic building blocks for the research. These are MDE, OPC UA and UML. The authors give a brief history of the beginning of the application of the technologies used, as well as the relationship between them in the current project. The third part describes the process of transformation during the transition from UML to OPC UA. The Atlas Transformation Language (ATL) is used to translate UML elements to OPC UA elements. Readers can find the description of the ATL and the transformation process in the fourth part. In the final paragraphs, the authors conclude with an outlook on future	

		work. As part of the results of the work, a table of comparison between UML and OPC UA is present. In my opinion, this solution is promising for the integration of the cyber-physical systems in the production process. The results of the work can be used for further research. This paper will be also useful to help represent information models and the relationship between them while implementing the former in accordance with different data communication standards.	
Иностранный язык в сфере профессиональной коммуникации.			
Деловая переписка	Контрольная работа	Напишите деловое письмо к одной из следующих ситуаций: **Situation 1.** Your customer has written complaining about late shipment. Reply apologizing for the situation and offering some refund. (Customer: Jack Williams, Apartment 18H, 5 Washington Square, New York, NY 10012, USA). **Situation 2.** You are unsatisfied with the work of laboratory staff you worked with during your business trip. You're writing a letter of complaint to Customer Relation Manager. (Royal Oak Hotel, 14 Shepherds Street, Henford, HN3 7PP, USA). **Situation 3.** Request for shipment documents from your partner. You urgently need Packing List, Certificate of Origin and Export Declaration. **Situation 4.** Notify a customer about the delay in shipment for a week due to new Customs rules. **Situation 5.** You want to complain about delay in shipment and demand a compensation.	*Оценка:* зачтено *Описание характеристики выполнения знания:*
Участие в международных семинарах и конференциях	Творческая задача	Вы собираетесь принять участие в конференции. Найдите подходящую конференцию по тематике. Заполните регистрационную форму. Напишите сопроводительное	*Оценка:* зачтено *Описание характеристики выполнения знания:*

		письмо в издательство о своем выступлении на данной конференции. Образец сопроводительного письма DK Department of Education Moscow Region State University 10 Radio Street Moscow, Russia, 105005 e-mail Managing Editor Journal of Teacher Education 1307 New York Ave. Washington, DC, USA, 20005 jte@msu.edu May 24, 2020 Dear Editor-in-Chief I am delighted to submit an original research article entitled «Formation of the professional orientation of future technology teachers based on the implementation of the special course “Russian folk traditions in clothing” for publication in Journal of Teacher Education. I think this article is appropriate for this journal because this study covers the issue of the formation of the professional orientation of future technology teachers on the basis of the special course "Russian folk traditions in clothing" using the CLO - 3D software. An analysis of scientific and methodological literature revealed the need to develop the work program of the elective course "Russian folk traditions in clothing". As a result of the development of the elective course the CLO 3D program we have identified a set of competencies that reveal the formation of the professional orientation of students.	

		I believe that your readers will find this research useful. Many thanks for your time and consideration. I look forward to your response. Yours sincerely, DK Postgraduate Department of Education Moscow Region State University	
Презентация доклада на конференции	Творческая задача	Составьте доклад и презентацию своего выступления на конференции. Образец доклада **Report** I am happy to have this opportunity to present my paper. The aim of this study is to carry out pedagogical design of technologies for the formation of the professional orientation of future technology teachers based on the study of the discipline "Russian folk traditions in clothing" using the CLO 3D software. The Ministry of Education and Science of the Russian Federation sets the main task to carry out a comprehensive project of modernization of teacher education. A future teacher must have a high level of psychological and professional training, must be a highly educated specialist, have an active civic position, to learn through self-education constantly, have a clear idea of the development of modern technologies. The training of teachers at a qualitatively new level is one of the most important state priorities. I would like to stress that тhe main task in the process of introducing education of a new generation is to provide highly qualified, competitive specialists in any industry. In this regard, prerequisites appeared for the development of a special course. The uniqueness of the development of this special course lies in the absence	*Оценка:* зачтено *Описание характеристики выполнения знания:*

		or completely unadapted form of the multitude of teaching methods presented by Internet resources that are impossible for the implementation of software and methodological support for working with a new software product. To achieve these goals, we have studied the abilities of software presented at the information technology market for creating light industry products: “Grafis”, “Gerber”, “Julivi”, “Optitex”, “DressingSim”, “Marvelous Designer”, “CLO 3D”. Now I would like to give a brief outline of CLO 3D software. In the MARVELOUS DESIGNER CLO program, you can not only design products of light industry, but also you can see animated visualization of a model, track the design, fit, fabric selection of the designed product. This program is also suitable for employees of retail chains, for marketing and visual merchandising departments directly, making it possible to design visual presentations of product displays in stores, as well as online spaces. To summarize I would like to say that introduction in the content of the special course sections and topics in the field of computer modeling, as applied to the study of the traditions of The Russian folk outfit, will contribute to the formation of a holistic system of professional orientation for future technology teachers. And with this I’d like to finish. If there are any questions I’ll be glad to answer them. Thank you.	
Ведение переговоров	Контрольная работа	Прослушайте диалог на одну из предложенных тем: 1. Обсуждение условий контракта 2. Обсуждение бюджета и финансов 3. Разговор по телефону о встрече 4. Обсуждение доставки и расходов	*Оценка:* зачтено *Описание характеристики выполнения знания:*

		5. Обсуждение будущего сотрудничества	
Иностранный язык в сфере профессиональной коммуникации.			
Электроэнергетика и электротехника Теплоэнергетика и теплотехника Информатика и вычислительная техника Радиоэлектроника и электроника	Контрольная работа	***1. Listen to a conversation between two nuclear engineers. Mark the following statements as true (T) or false (F).*** 1. ___ The woman is working on a new ICF machine. 2. ___ The machine will use ohmic heating. 3. ___ The woman's team is researching ignition temperatures. ***Listen again and complete the conversation.*** **Engineer 1:** Yes, it is. Government **1. _____** just agreed to my team's plans. **Engineer 2:** Congratulations. **2. _____ _____** are those? **Engineer 1:** We hope to build a new **3. _____ _____**. Then, we'll compare it to our current ICF machine. **Engineer 2:** That sounds challenging. You're using **4. _____ _____**, right? **Engineer 1:** Actually, we're considering an **5. _____ _____**. **Engineer 2:** Really? I thought that was less effective. **Engineer 1: 6. _____ _____** some tests now to find out. **Speaking** ***With a partner, act out the roles below based on the listening task above. Then, switch roles.*** USE LANGUAGE SUCH AS: What plans are those? That sounds... Really? Student A: You are an engineer. Talk to Student B about: • your current research	*Оценка:* зачтено *Описание характеристики выполнения знания:*

		• tests you are conducting • his or her recommendations Student B: You are an engineer. Talk to Student A about his or her new project.	

Промежуточная аттестация

Промежуточная аттестация по программе проводится в форме зачета, экзамена или отчета о стажировке в соответствии с учебным планом. Характеристика заданий представлена в табл. 2.

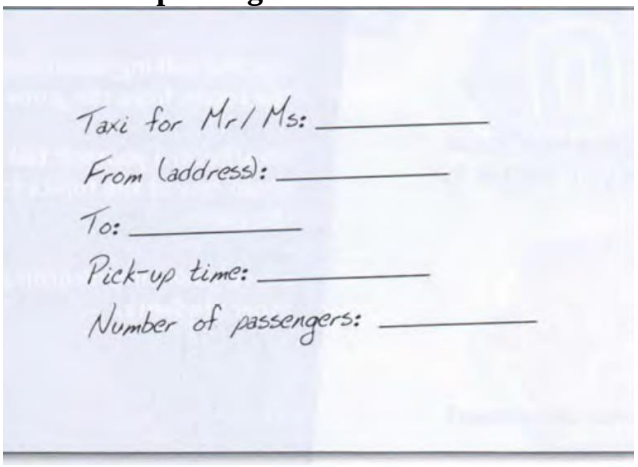
Таблица 2

Характеристика заданий промежуточной аттестации

Наименование дисциплины (модуля)	Пример задания	Критерии оценки
Иностранный язык	I. Выполните тест. 1. take, big, sport, pure a) 2, 1, 4, 3 типы слогов b) 1, 2, 3, 4 типы слогов c) 3, 1, 4, 2 типы слогов 2. You will see a lot of sheep__ in this village. a) __ b) -s c) -es 3. My _____ favourite food is pizza. They eat one every week. a) brother's b) brothers c) brothers' 4. When _____ spring comes, _____ sun shines brighter, ___ snow melts, _____ days become longer. a) the, -, -, - b) -, the, the, the c) -, -, the, the 5. The managers haven't discussed (important) question at the meeting yet. a) more important b) the most important c) important 6. I _____ to the shop, when I _____ my best friend buying a magazine. a) walked, was seeing b) walked, saw c) was walking, saw 7. My children _____ their homework by dinner. a) will finish b) will have finished c) will be finishing 8. _____ you _____ lonely without me while I _____ away? a) will …. feel, am b) will …. feel, will be c) do … feel, will be 9. A lot of questions _____ to the administration every day. All of them are anonymous. a) is sent b) are sent c) send 10. These documents _____ by your secretary recently.	*Оценка:* зачтено *Описание характеристики выполнения знания:*

	a) have been brought b) were brought c) are brought 11. The scientist knew that he _____ one day. a) will hear b) will be heard c) would be heard 12. _____! My arm hurts, be careful. a) Ouch b) Yuk c) Yummy 13. The papers were signed _____ the police officer. a) by b) with c) - 14. There will be sunny weather _____ Tuesday. a) at b) in c) on 15. If my cat saw a mouse in the kitchen, it (to try) to catch it. a) would have tried b) would try c) tried 16. If you are late again, I … (have to) ask you to leave this job. a) will have to b) would have to c) would have had to 17. If Brian (to follow) my advice, he wouldn't have got into trouble. a) would have followed b) followed c) had followed 18. They could see the mountains from the hotel window last year, couldn't they? a) расчлененный вопрос b) альтернативный вопрос c) специальный вопрос 19. Sam said "I'm not worried about losing my job. I'm too important to the company." a) Sam said that I was not worried about losing my job. I was too important to the company. b) Sam said that he hadn't been worried about losing his job. He was too important to the company. c) Sam said that he wasn't worried about losing his job. He was too important to the company. 20. Nick's mother said to him, "Don't eat too much ice cream." a) Nick's mother told him not to eat too much ice cream. b) Nick's mother told him to not eat too much ice cream. c) Nick's mother told him don't eat too much ice cream. II. Выполните упражнения на аудирование. **I. Watch the first part of the video. Tick the things you see/hear.** • a woman putting her coat on • a man dropping his phone on the floor • a man giving his name and phone number	

II. Watch again and complete the form for the taxi.
Taxi for Mr / Ms: Richard Goodley
From (address): 29 Market Street
To: train station
Pick-up time: 9:45
Number of passengers: 2



III. Watch the second part of the video. Tick the things you see/hear.
• a mobile phone ringing
• a woman looking for her mobile phone
• a man sending a text message
• a woman apologizing

IV. Watch the third part of the video. Tick the things you see/hear.
• a man getting angry
• a woman taking a photo on her phone
• a man dialling a wrong number

Complete the key phrases with the words in the box.
about
speaking
call
that
here
talk
number
who's
soon

1 Emma Johnson _____. here
2 _____ that? Who's
3 It's not a good moment to _____. talk
4 Can I _____ you back? call
5 Talk _____. Bye! soon
6 This is Richard Goodley _____. speaking
7 I'm calling _____ a taxi. about
8 Is _____ A 1 Taxis? that

	9 Wrong _____. Number	
Иностранный язык	Выполните письменный перевод предложенной статьи или статьи по выбору объемом 10000 - 15000 печатных знаков. При переводе обратите внимание на особенности перевода научно-технической литературы с точки зрения особенностей употребления лексико-грамматических конструкций в научно-технических текстах. Rational altruism? On preference estimation and dictator game experiments Philip D. Grech a,∗ , Heinrich H. Nax b,c,∗ a *Department of Management, Technology and Economics, ETH Zurich, Scheuchzerstrasse 7, 8092 Zurich, Switzerland* b *Behavioral Game Theory, ETH Zurich, Clausiusstrasse 37, 8092 Zurich, Switzerland* c *Institute of Sociology, University of Zurich, Andreasstrasse 15, 8050 Zurich, Switzerland* Abstract *Experimental implementations of dictator games are found to differ in terms of their underlying strategic incentives. We explore this discovery in two separate directions. Theoretically, assuming identical other-regarding preferences, we show that the two most widely used protocols can generate strongly contrasting rational-choice predictions, from which different interpretations of dictator giving arise. Experimentally, a tailor-made experiment reveals significant differences between the two protocols but rejects full rationality as a satisfactory explanatory theory. Our findings indicate that several previously drawn conclusions regarding other-regarding preferences among humans distinguished by social class, gender, generation, nationality, etc. may be more ambiguous than hitherto believed.* *Keywords:* Altruism Charitable giving Dictator games CES utility functions Distributional preferences Social preferences Experimental economics Foundations 1. Introduction In the original formulation of the dictator game (Kahneman et al., 1986; Forsythe et al., 1994), one person acting in the role of a ‘dictator’	*Оценка:* зачтено *Описание характеристики выполнения знания:*

	decides how to split a pie of fixed size, or, equivalently, how much of his own wealth to redistribute to someone else at a one-to-one exchange rate; see Fig. 1a for a stylized illustration. Understanding how individuals behave in such situations and why they do so has important implications for explaining human behavior in general, and, in particular, for a wide array of giving-contexts such as cooperating, donating, negotiating, helping, etc. From the perspective of narrow self-interest, a dictator maximizes his material payoff by keeping everything and giving nothing. The fact that positive giving is consistently observed in controlled laboratory experiments ever since Kahneman et al. (1986) falsifies the hypothesis that all humans are always narrowly motivated by material self-interest.1 In order to move on and measure more precisely how other-regarding (also referred to as distributional, social, altruistic etc.) concerns matter beyond narrow self-interest, generalized dictator game experiments have been conducted where the multiplier of redistribution is varied meaning that a dictator's giving may have different worth in the recipient's hands. Giving decisions across a range of thus modified dictator games have been used to calibrate various other-regarding preference types. Inferring preferences from giving decisions in this way relies on the fundamental assumption that individual actions ac- curately 'reveal' preferences in the sense that all payoff-relevant factors (including beliefs) are expressed (Samuelson, 1938). Andreoni and Miller (2002) made a seminal contribution translating methods based on the generalized axiom of revealed preferences (GARP) from consumer theory to dictator games, thus proposing a framework to estimate other-regarding pref- erences based on classical rationality axioms (hence 'rational altruism'). The key insight of this literature is to interpret individual giving as rational decisions driven by individual other-regarding preferences, an approach sometimes subsumed under the umbrella of the 'subjective expected utility correction project' (Gigerenzer and Selten, 2001). Andreoni and Miller (2002)'s method is widely used (see e.g. Fisman et al. 2007, 2015b,a), prominently to fit utility functions of	

the constant- elasticity-of-substitution (CES) family which allow classifications of individuals according to their trade-offs of self-interest vs. altruism and of equality vs. efficiency; see Jakiela (2013) for a literature overview.2 Related methods based on different functional assumptions regarding utilities include, for example, the classic 'ring measure' from social psychology (Liebrand, 1984; Murphy et al., 2011; Nax et al., 2015), and other other-regarding preferences such as those due to Fehr and Schmidt (1999), Bolton and Ockenfels (2000), Charness and Rabin (2002).

All other-regarding preference estimation techniques, whether based on CES utilities or on other preference models, rely crucially on a special feature of the dictator game as it was originally formulated (henceforth referred to as the 'non- interactive' dictator game), which is that giving decisions are not interdependent: the dictator is no one's recipient and the recipient is no one's dictator (as illustrated in Fig. 1a). If the decision context is instead strategic, as is the case when a player gives and receives at the same time (thus yielding a truly interdependent one-shot game as illustrated in Figs. 1b & 1c), then giving decisions cannot be disentangled from beliefs regarding others' giving decisions, and individual preferences cannot be inferred in the same way. In such 'interactive' dictator games where each player assumes both roles –dictator and recipient– at the same time, each player's total monetary payoff is, on the one hand, determined by the payment he/she receives from 'his/her' dictator, and, on the other hand, by the amount he/she keeps and does not give to 'his/her' recipient. Thus, the payoff to any given player is a function of his/her own decision *and* those of others.3

The key motivation for the present paper was our discovery that many dictator game studies that aim to measure preferences have been and continue to be implemented interactively, but are then analyzed within the framework of non-interactive dictator games.4 To the best of our knowledge, the implications of such protocol pooling have so far not undergone detailed scrutiny in the scholarly literature.5 This is also illustrated by Engel's extensive (2011) meta-study of the dictator game experiments

	literature which does not differentiate along this dimension. Similarly, Jakiela (2013)'s review of dictator game studies that focuses on measuring other-regarding preferences does not mention this issue either. However, treating non-interactive and interactive dictator games the same has consequences regarding the interpretation of such experiments, in particular regarding the rationality assumptions that pertain to their analysis. While rational-choice assumptions allow for other-regarding preference estimation as outlined above under non-interactive protocols, the applica- bility of such techniques for interactive protocols relies on a rather extreme view of rationality. Concretely, it requires that the economic agent is, on the one hand, perfectly rational in terms of pursuing utility-maximization that takes into account the welfare of others, while, on the other hand, he/she is perfectly irrational in a strategic sense and unaware that others take decisions that are relevant for himself/herself. That is, he/she is highly rational in terms of his/her effect on others' welfare, but entirely unable of any 'cognitive empathy' in terms of putting himself/herself in others' shoes. If maintained, the kind of strategic unawareness outlined above would either be a natural trait of humans or it would have been created by the experimenter, namely if subjects were successfully framed so as to perceive an interactive setting as a non-interactive one. The former case conflicts with findings from many other –often more sophisticated– experimental games, the latter might violate important principles of experimental economics. Indeed, following Bardsley et al. (2010), subjects should be provided with instructions that bring across accurately the true nature of the underlying decision con- text: a comparison with (theoretical) rational-choice benchmarks of an experimental game becomes meaningful only when subjects can reasonably be assumed to have a correct interpretation of the underlying strategic structure. Thus, either all payoff consequences of actions ought to be explained to subjects, or, whatever is not being explained ought to be made explicit. And indeed, most studies in experimental game theory rely on	

	instructions where a great deal of effort is made to make strategic interdependencies explicit (by using matrices, figures, examples, etc., for example, in voluntary contributions games, trust games, etc.). All interactive dictator game instructions we are aware of state the interactive nature of the game explicitly (with a sentence or two), but without providing further details to make it particularly easy to understand (controls in our experiment, which is based on standard instructions, actually reveal substantial rates of misunderstanding in all treatments, cf. Footnote 36 below). As a result, we as analysts can neither be sure that subjects understand the interdepen- dencies perfectly (and do not play the game as if it was non-interactive), nor that they do not understand them at all (and do play as if the game was non-interactive). If, by contrast, we let go of the assumption of strategic unawareness, the two protocols can no longer be used interchangeably, as one of them is non-strategic and the other represents a proper (one-shot) game.6 Thus, beyond preferences for selfishness and efficiency, differing degrees of strategic sophistication and awareness then influence the observed giving patterns in interactive settings and provide additional confounds. Related to this, Dufwenberg et al. (2011) have shown that a similar interpretational ambiguity arises in competitive equilibrium according to which it is generally impossible to infer other-regarding preferences from behavior. The goals of the present paper are twofold. First, we develop standard neoclassical rational-choice benchmarks for an interactive dictator game model and compare them with rational giving decisions in non-interactive games.7 This will con- stitute an analysis of the interactive dictator games' Nash equilibria where players are characterized by the same kinds of other-regarding preferences that are used in non-interactive dictator games. Second, we conduct a tailor-made experi- ment in order *(a)* to test for protocol differences between interactive and non-interactive implementations, and, if there are differences, *(b)* to investigate whether rationality benchmarks can explain observed behavior. Our theory results summarize as follows. In the non-interactive case, rational giving with other-	

	regarding preferences predicts that the amount allocated by a dictator to his/her recipient is an intermediate one, unless the individual is nar- rowly self-interested (perfectly altruistic), in which case he/she gives zero (everything). In the interactive case, the standard rational-choice benchmark is Nash equilibrium, which accounts for the fact that giving decisions are interdependent. We show that there exist many circumstances under which equilibria are characterized by a bang-bang structure: specifically, if players have sufficiently low (high) concerns for others' payoffs, then zero (full) payments are made. This is true for arbitrary assumptions regarding 'bracketing' (i.e. how weights are being attached to other players), for (some) incomplete information regarding other players' preferences and experimental parameters, and for an array of alternative other-regarding prefer- ence specifications (in particular, CES utilities and preference models by Fehr and Schmidt (1999), Bolton and Ockenfels (2000), Charness and Rabin (2002)). Finally, we also show that, under various natural assumptions on players' bracketing and concerns, extremal payments constitute the unique pure-strategy Nash equilibria. These findings enable us to make a clear case in point regarding the inferential problem addressed above: zero giving in interactive dictator games *cannot* unambiguously be interpreted as extreme selfishness as it may also be strategic play by a substantially altruistic individual. Thus, a population sample making zero payments under an interactive design could in principle even be *more* altruistic than another population sample making non-zero payments under a non-interactive protocol. For full disclosure, we point out that our specific equilibrium results may be more or less generic depending on the specific interactive protocol being used – and we wish to abstain from making any claims other than what we can prove. However, we hope that even the skeptical reader can, by virtue of our arguments, appreciate the fact that non-interactive and interactive protocols yield different rational-choice benchmarks – and in many cases even quite strikingly so. An experimental investigation of protocol	

	differences complements our theory, providing the basis for additional tests. To follow as methodologically clean a test procedure as possible, we pre-committed a complete analysis plan at the Open Science Framework (OSF) based on a pre-registered design akin to randomized controlled trials as are standardly used in various other disciplines. Our experimental findings summarize as follows. First, we test for protocol differences, and find that significant differences exist. This implies that the differing strategic incentives have *some* –to be understood– effect. Second, we derive a set of testable hypotheses from our theoretical results, and by rejecting these establish that standard rational-choice assumptions cannot organize the data, even though some of the differences bear traces of interactive play.8 In combination, both our theoretical and experimental results highlight that the determinants of voluntary giving are more complex than hitherto assumed and suggest that experimental studies relying on interactive protocols are difficult to interpret: taking their (non-interactive) theory part as a given, different experiments seem to be in order, taking their (interactive) experimental part as a given, a different theoretical treatment is warranted.9 The remainder of this paper is structured as follows. Next, we outline the models and present our theory results. In the subsequent results sections, we discuss their relevance for dictator game implementations, analyze our own experiment and compare our findings with existing data from the literature that uses both non-interactive and interactive implementations. Finally, summary and outlook conclude.	
Иностранный язык в сфере профессиональной коммуникации.	Подготовьте доклад для выступления на конференции по предложенной статье. Образец статьи: Control in A.C. Microgrids: Hierarchical Control, Technologies, and Regulations – Colombia José Miguel RAMIREZ Universidad del Valle jose.ramirez@correounivalle.edu.co Martha OROZCO Universidad del Valle martha.orozco@correounivalle.edu.co Eduardo GÓMEZ-LUNA Universidad del Valle eduardo.gomez@correounivalle.edu.co	*Оценка:* зачтено *Описание характеристики выполнения знания:*

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ABSTRACT

Electric microgrids have become a viable option to integrate distributed generation resources, improving the resilience and reliability of the electrical system. Microgrids have different electrical characteristics and operational requirements than large Power Systems, which requires different control strategies than traditional ones. In Colombia, several initiatives are being developed to promote electrical microgrids. Within this framework, CIGRE Colombia presents this technical report, which based on the international regulations, describes for AC microgrids, main requirements and control functions, hierarchical control structure, and physical infrastructure for control implementation, to serve as a reference for national companies planning to implement microgrids in Colombia.

KEYWORDS

Microgrids, power electronics, distributed generation, control systems, real-time simulation, closed loop, mathematical model, digital twin, primary control, secondary control, tertiary control, interoperability.

1. INTRODUCTION

The need to integrate distributed renewable generation resources in an efficient and reliable manner has driven the development of electrical MicroGrids (MGs); in particular, MGs allow integration of non-conventional renewable energy sources into medium and low voltage distribution grids. A MG is a group of interconnected loads and Distributed Energy Resources (DER), with clearly defined electrical boundaries, which acts as a single controllable entity with respect to the grid and can be connected or disconnected from the grid, to operate in interconnected or isolated mode [1], [2], [3].

	The MG connects to the main grid at a single Point Of Interconnection through a breaker. It has several types of loads: critical, such as those related to life support systems, security and information and communication technologies; sensitive, such as powering electronic systems that require high power quality and should preferably be kept online; adjustable in various levels, such as ventilation and air conditioners; and disconnectable, which can be opened at any time to allow balancing a high load with available generation, such as pumping systems or battery charging. The MG has Distributed Energy Resources (DER) for energy generation and/or storage. Distributed Generation (DG) could be dispatchable, such as diesel generators with synchronous generators and thermoelectric cogeneration; or could be non-dispatchable, like renewable energies from photovoltaic and wind generation; the variability of this generation and of loads, may require the use of energy storage, such as hydraulic storage tanks, thermal capacitances, flywheels or banks of electric batteries. Many of the distributed energy resources are connected via electronic power converters, such as bidirectional converters for batteries, inverters for photovoltaic Direct Current (DC or dc) generation and wind generation with AC/DC/AC conversion. The MG control system is composed of decision-making software and various elements of measurement, communication, and actuation. The control system is in charge of regulating the frequency and voltages in MG nodes, the cutting or displacement of loads, the economic dispatch, the interaction with the power system and the decisions of the interconnected or isolated mode of operation. MGs present benefits to be considered at time of their implementation, such as: • Reduction of the environmental impact caused by fossil energy sources. • Reduction of power in transmission and distribution lines. • Postponement of investments in the conventional electricity grid. • Energy losses reduction.	

	• Improved reliability and quality of service for the end user. • Increased security and resilience of grid. • Economic benefits and new markets for MG users. • Supply the demand growth, in particular are a reliable solution for supplying energy in Non-Interconnected Zones. Colombia has started with major initiatives and regulations for MG implementation since 2014 with the issuance by the Ministry of Mines and Energy of Law 1715, where the integration of non-conventional renewable energy sources has been strongly promoted; from this date the Energy and Gas Regulatory Commission (CREG) has issued a large number of regulations which have allowed to go unifying the concept of MG, in terms of what concerns to: Distributed Generation [4], [5], Storage [6], Smart Metering [7] and Demand Response [8]. In addition, the National Operation Council and the Energy Market Administrator XM have issued agreements that define guidelines for the correct operation of the National Interconnected System, which has generated a new grid code for the country. On the other hand, several sectors have been promoting the implementation of MGs in Colombia; The *Colombia Inteligente* initiative carried out a benchmarking in order to identify factors that contribute to the sustainability of energy solutions, especially using MGs and independent systems, which allow combining available technological trends with productive and financial models around communities in remote regions. Additionally, were proposed strategic guidelines for sustainable MGs implementation in the country, these guidelines were built by different actors at the national level, in collaborative work exercises [2]. Other initiatives promoting MGs in Colombia are from the Ministry of Science, Technology and Innovation, MINCIENCIAS, where through the Scientific Ecosystem Programme, the developments of national and international	

academia are being articulated with the needs of the industrial sector, with projects for the definition of transformation strategies in the Colombian energy sector which promote sustainable energy and the implementation of pilot MGs. Among the alliances are [9] and [10].

Due to this landscape and several initiatives for MGs deployment in Colombia, from different actors of the energy sector, CIGRE Colombia, from its committee C6 - Distribution and Dispersed Generation Systems and its working group C6.2, Control and Operation of MGs, presents this technical report where the most relevant aspects for an adequate control and operation of MGs are described, with the purpose of serving as a reference for the national companies that plan to implement MGs at industrial and commercial level, in the short and medium term.

The article has been divided into 5 sections: section 2 presents the Colombia situation related to microgrids, section 3 presents hierarchical control in MGs, section 4, the supervision and control technology to implement and validate the control and optimization algorithms, and finally, section 5 presents conclusions and recommendations.

2. COLOMBIA SITUATION MICROGRIDS

Non-interconnected zones (NIZ) in Colombia represent the 51% of the national territory. The predominant configuration to electrify those zones is based on diesel generators (91% of overall generating capacity), providing power for households and productive process [11], [12], but at a higher cost than the interconnected system in terms of price and carbon footprint. In some cases, small hydroelectric plants are used, and exceptional cases integrate photovoltaic plants and batteries, the last called hybrid systems, which allows supplying demands for greater capacity. According to [12], for 2021, the installed capacity in NIZ was 294.8 MW, of which
265.6 MW and 29.6 MW correspond to diesel generators and renewables, respectively. Particularly, hybrid systems contribute with

	6.3% of the total installed capacity. The territories with higher installed capacity of hybrid system are Guainía with 69.53%, followed by Chocó 14.32% and Guajira 8.15% [12]-[13]. Some representative microgrids projects in Colombia have been developed in Punta Soldado, Valle del Cauca, and Guajira to Wayúu community. In the first case, a MG formed by a photovoltaic plant of 74,88 kWp, a storage system (based on batteries) of 9.312 Amp/hour, and a diesel generator was developed. Punta Soldado is an island, in which 144 houses and commercial and institutional places conform the community [14]. With the aim to guarantee the sustainability of the project, the community was trained about administration, accounting, and technical skills. An economic model was developed, which considers aspects such as an energetic tariff, intelligent measurement, and energy subsidy for community places. This MG impacts the socioeconomic development of the island since it is capable of feeding refrigerators used to preserve fish, which is one of the main economic activities of the inhabitants. On the other hand, the design and implementation of an AC microgrid (MG) formed by 1kW of wind energy, 5.76 kWp of photovoltaic panels and 20.4 kWh of batteries has been reported in [15]. That microgrid supplies the need of expecting loads such as lighting, air conditioning, refrigerator, freezer, cell phones, lamps, television, modem, fan, tablets, among others. A methodology including the continues participation and capacitation of the community was developed, which turns out to be necessary to positively impact the success of these kind of projects. Guajira is a rich region in terms of resources such as coal, gas, solar and wind. However, that region presents greater social backwardness with unsatisfied basic needs. To supply energetic needs in those kinds of regions, the Colombian government has created Plans of Sustainable Rural Energization, called PERS, within which the PERS Guajira is being developed, also other	

critical regions have been included such as Chocó, Nariño, Cesar among others. The aim is to collect socioeconomic and energy information to construct documents, which are fundamental information for regional energy planning and for decision-making by private investors. Moreover, the Colombian government has carried out two renewable energy auctions, in 2019 and 2021. In 2019, 1298.9 MW were adjudicated in eight projects, five of them to be implemented in Guajira region developing wind energy. In the last auction, 800 MW were adjudicated, all of them for solar projects. With these auctions, the Colombian government expectation is to reach a 15% of renewable energies participation in the energetic matrix of the country.

3. MICROGRIDS HIERARCHICAL CONTROL

The MG control requirements specify two central functions: transition between connected and island operations and DER dispatch to balance generation with load and respond to internal MG events related to load profiles, generation, and the external orders from the distribution grid. The dispatch function imposes MG desired power references, which must be distributed in the DERs, also ensuring adequate frequency and voltage regulation at their nodes. To perform these functions, a hierarchical control inspired by the frequency control of the power systems is used, divided into three levels: primary control, secondary control and tertiary control, see the diagram in Figure 1, for the case of a generator with Voltage Source Inverter (VSI).

Primary control refers to the control of each generator; using local measurements, it seeks to regulate the MG frequency and the voltages in MG nodes, with an adequate powers distribution between the DER. The primary control brings the MG to a stable equilibrium point, even when the frequency and voltage are different from their nominal values. The secondary control has the function of driving the system back to the nominal operating zone; it can be distributed or centralized, but in any case, communications are

required [16]. The tertiary control coordinates the MG with the power system; it is an optimization algorithm, usually centralized, that seeks to minimize operating costs and losses, considering operating restrictions of generators, storage, and grid [17].

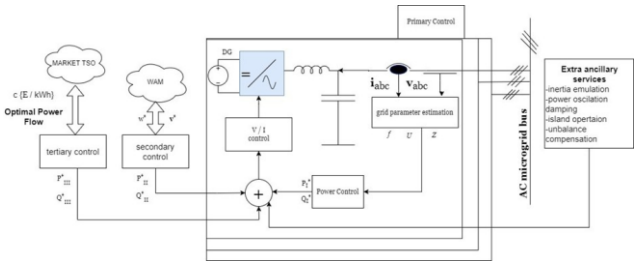

Figure 1 ***Figure 1. Hierarchical control scheme of an MG. Adapted from*** **[18].**

1.1 PRIMARY CONTROL

This control has a fast response by using local measurements; it uses controllers for voltage (*V*) and/or current (*I*) of the generator output, subject to controls for the distribution or regulation of active power (*P*) and reactive power (*Q*) between generators.

In the primary frequency control for synchronous generators, the frequency is controlled with the speed governor, which generates the valve position based on the error between the measured frequency and the desired frequency; this position defines the flow feed from the energy source (water, fuel, or steam) to the turbine, which generates the motor torque to the generator, to regulate the frequency (speed) and control the active power.

The voltage magnitude is controlled by the automatic voltage regulator, which receives the measurement from the voltage transducer and generates the control signal, a function of the error between measured and desired voltage, which is sent to the exciter (typically a controlled rectifier) to vary the generator field voltage so that the voltage error is corrected

In MG with DER with grid-connected power converters, the primary control of power, frequency, voltage and current has different configurations depending on the converter

operation as grid-forming, grid-feeding or grid-supporting, see Figure 2.

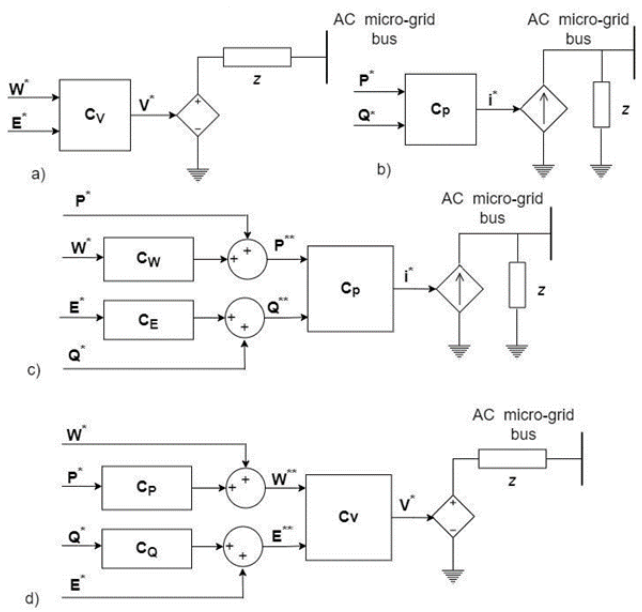

Figure 2 ***Figure 2. Block diagrams of power converters according to their grid operation a) (a) grid-forming, (b) grid-feeding, (c) current-source-based grid-supporting, and (d) voltage-source-based grid-supporting. from [13].*** **W* and E* are the references for frequency and voltage amplitude; P*and Q* are the desired active and reactive powers; V* and i* are voltage and current sinusoidal sources; CV,W,E,P,Q are the corresponding controllers.**

In island operation there must be at least one grid-forming, which is an AC voltage source with low output impedance, Figure 2 a). The Cv voltage controller regulates the magnitude and frequency of the inverter voltage V* at the MG operating levels. With the MG connected to the grid, the voltage and frequency are defined by it, so the operation of the converter is switched to grid-feeding, Figure 2 b), where the inverter is controlled to operate as a current source, having a high output impedance (it can also be a voltage source); the current injected into the network is defined by the control Cp that imposes the desired powers P* and Q*. The operation of the inverter as grid-supporting in isolated MGs can be as current source, Figure 2 c), or voltage source, Figure 2 d); both cases combine the grid-forming and grid-feeding operation.

The different converter operation modes are achieved by various functions: DC voltage control, AC voltage control, AC current control, grid monitoring, grid synchronization and line impedance detection.

	The voltage and current controls are implemented in □-□ or *d-q* coordinate systems [18]. With balanced three-phase currents and voltages, the Concordia transformation generates an equivalent representation with two fixed perpendicular coordinates □-□; since the variables are sinusoidal, the current and voltage controllers are of the Proportional-Resonant type [18]; this allows to add resonant filters in parallel that eliminate harmonics at different frequencies. The variables in fixed coordinates □-□ are rotated by means of the Park transformation to a moving coordinate system *d-q* rotating at the grid frequency *w*; in *d-q* coordinates, the variables have constant values in steady state, so the current and voltage controllers are the classic Proportional Integral Derivatives (PID). Given the flexibility of VSIs, it is possible to have other functions such as unbalance compensation and improvement of MG stability with inertia emulation and oscillation damping [18].	
Иностранный язык в сфере профессиональной коммуникации.	Выполните следующие задания. ***1. Listen to a conversation between a nuclear engineer and a plant regulator. Choose the correct answers.*** 1. What is this conversation mostly about? **A.** the costs of upgrading a power plant's safety equipment **B.** causes of a recent nuclear meltdown at a power plant **C.** new technology for accident prevention at power plants **D.** the proposed safety practices of a power plant 2. What safety feature will address equipment failure? **A.** thorough equipment testing **B.** machinery to monitor decay heat **C.** redundancy in the plant design **D.** a criticality accident alert system ***Listen again and complete the conversation.*** **Regulator:** I still have some **1.** _____ about the	*Оценка:* зачтено *Описание характеристики выполнения знания:*

	safety of the plant, though. **Engineer:** With the proper **2. _____ _____**, a nuclear power plant **3. _____ _____ _____** to a community. **Regulator:** Yes, but even the most advanced plants **4. _____ _____.** **Engineer:** Actually, most nuclear accidents are **5. _____ _____ _____ _____.** **Regulator:** What difference does that make? **Engineer:** I think with the proper **6. _____ _____**, we can minimize our risk. ***Speaking*** ***With a partner, act out the roles below based on the listening task above. Then, switch roles.*** USE LANGUAGE SUCH AS: I still have some concerns ... Actually most ...are caused by... What other... would you take? Student A: You are an engineer. Talk to Student B about: · the safety features of a power plant · causes of nuclear disasters · how nuclear disasters can be prevented Student B: You are a plant regulator. Talk to Student A about the risks and safety features of nuclear power plants.	

Итоговая аттестация

Итоговая аттестация по программе проводится в форме *итогового зачета*. Характеристика заданий представлена в табл. 3.

Таблица 3

Характеристика заданий итоговой аттестации

Вид контроля	Краткая характеристика задания	Критерии оценки
Итоговая аттестация	I. Запишите то, что вы слышите. One sunny afternoon, a boy named Robert was playing outside with his friends. The sun was very bright and hot. Robert and his friends were sweating. They wanted something cold to eat. What can we buy that is cold and delicious? Asked Robert. Ice cream, said one friend. Great idea, said Robert. Finally, when the ice cream truck came down the street, the boys were able to get a cold, delicious treat. They smiled and enjoyed their ice cream.	*Оценка:* зачтено *Описание характеристики выполнения знания:*

II. Выберите правильный ответ.

1. By the time we came, our friends _____ away the table.
a) have already taken b) already took c) had already taken

2. This piece of music (to know) to the audience. But it never (to play) so wonderfully.
a) is known, has never been played b) knows, has never been played c) is known, has never played

3. When Tracy and Steve _____ in they _____ round the table. Mr. and Mrs. Gibbs _____ TV, Molly _____ and the others _____.
a) came, were sitting, were watching, was writing, were reading
b) come, sat, watched, wrote, read
c) came, were sitting, was watching, was writing, was reading

4. Are you going to make a cake _____ have you already made it?
a) because b) or c) but

5. The morning was beautiful today but the weather became (bad) by the evening than it was in the morning.
a) worse b) the worst c) bad

6. ___ Statue of Liberty was given as ___ present by ___ people of ___ France to ___ people of ___ United States.
a) a, a, the, __, the, the b) the, a, the, __, the, __ c) the, a, the, __, the, the

7. If my grandparents had locked up the chickens at night, the fox (not to eat) them.
a) would not have eaten b) had not eaten c) would not eat

8. The guests were shown a lot of interesting pictures at this gallery.
a) В этой галерее гости показывали много интересных картин.
b) В этой галерее гостям показали много интересных картин.
c) В этой галерее гости показали много интересных картин.

9. "_____! You're stepping on my foot."
a) Yuk b) Yum c) Ouch

10. Are you going swimming _____ lunchtime?
a) in b) at c) on

11. been meeting not week has there a club the at this .
a) There has been not a meeting at the club this week.
b) There not has been a meeting at the club this week.
c) There has not been a meeting at the club this week.

12. the, will, would, to, show, you, read, like, you, books?
a) You will show the books you would like to read?
b) Will you show the books you would like to read?

c) Would you show the books you will like to read?
13. Your children never argue with you, _____?
a) do they b) don't they c) do you
14. Don't tell him my secret, please.
a) повествовательное предложение b) повелительное предложение c) вопросительное предложение
15. Has your grandmother made a cherry-pie or a banana cake?
a) альтернативный вопрос b) расчлененный вопрос c) специальный вопрос
16. The girl asked her father "Don't say anything to my boyfriend".
a) The girl asked her father not to say anything to her boyfriend.
b) The girl asked her father don't say anything to her boyfriend.
c) The girl asked her father not to say anything to my boyfriend.
17. table not do the dictionary the put on
a) The dictionary do not put on the table.
b) Not do put the dictionary on the table.
c) Do not put the dictionary on the table.
18. week at ago him I the met cinema a
a) I met him a week ago at the cinema.
b) I met him a week ago at the cinema.
c) I met him at the cinema a week ago.
19. Julia asked her husband: "Have you lost the money on horse-racing?"
a) Julia asked her husband has he lost the money on horse-racing.
b) Julia asked her husband if he had lost the money on horse-racing.
c) Julia asked her husband if you had lost the money on horse-racing.
20. Alex bought a smart suit yesterday.
a) простое предложение b) сложно-сочиненное предложение c) сложно-подчиненное предложение

III. Напишите аннотацию к предложенной статьи.

The Failure of Offense/Defense
Balance in Cyber Security
DOES THE CYBER OFFENSE HAVE THE ADVANTAGE?
There is a simple conjecture that is quite common in all aspects of society: the best defense is a good offense. The idea, offered by no less a luminary than George Washington in a letter to John Trumbull, shapes how many think about engaging any adversary. Washington wrote, "It is unfortunate when men cannot, or will not, see

	danger at a distance [France]…not less difficult is it to make them believe, that offensive perations, often times, is the surest, if not the only (in some cases) means of defense."[1] The basic premise of the idea is historically and theo- retically wrong. The US would clearly not have benefit- ed from an offensive war against France in 1799 when the new nation were barely able to handle the Barbary pirate nations a few years later. The perceived utility of the offense persists and promotes the belief that action can trump protection in cyber security because of its simplicity and the general failure in the field to evaluate claims with evidence. Avoiding prudence and restraint in favor of offensive superiority is a notion that contin- ues to pollute the discourse. The ideal of offensive advantage dominates the cyber- security field, carried over from research on the offense/ defense balance (hereafter the O/D balance) in warfare. [2] The basic framework offered by Lynn-Jones is that "there is an offense-defense balance that determines the relative efficacy of offensive and defensive securi- ty strategies."[3] Ever since visions of *Wargames* (1982) and thermonuclear war launched by out-of-control com- puters entered the imagination, conventional wisdom quickly called for offensive action against emergent technological threats. For some, technology and computers are so vague and unknown that what becomes conventional wis- dom often lacks basic logic. Strategists believe cyber- security is offense-dominant, attacking first and sort- ing out the damage later becomes the guiding star for cyber strategy. Understanding exactly what the cyber offense is would be helpful; the basics would be a fo- cus on attack and maneuver. There is an idea of going forward and operating outside of one's networks to deny options to the adversary. The defense is simple to explain in this context. It is about protections and ensuring the homeland infrastructure is secure to pre- vent the worse abuses of cyberspace. The benefit of prioritizing offense in cyber operations is a critical question. Belief in the util- ity of aggression is dangerous; it is also likely a reaction to the threat inflation pervasive in the discourse. Employees of the US government are fond of saying that they are taking fire from all sides in cyber operations. This pathology of offensive advantage and being under siege as a de- fender, reinforced by patterns promoted by the media and the Twitter discourse of constant cy- ber barrage, can only continue to lead to strategic malaise and constant attacks as the defender fails to shore up vulnerabilities due to the mistaken belief in the ascendancy of the offense.	

	In this article, I review the foundations of the dominant idea of cybersecurity offense being the best defense. I demonstrate the flawed logic of this framework and push for ideas that break the limits of it. Why does the community waste its time with a research program the security studies field already discarded? FAILURE OF AN IDEA: THE OFFENSE/DEFENSE BALANCE Origins and Failure of an Idea The basic premise of the O/D balance is that "when defense has the advantage over offense major war can be avoided." This simple conjecture has created a field of research that seeks to unlock the mysteries behind war and peace by focusing on the nature of operations and percep- tions of advantage.[4] That so many gravitate to the O/D balance in cyberspace demonstrates a failure to understand the history of the discipline and the lessons learned by those who came before. While research on the O/D balance exploded in the 1980s and 1990s, mainly due to early work by Snyder and Van Evera, it was on life support by the time Van Evera's book *Causes of War* appeared in 1999.[5] Proposing a solution to the problem of war and peace, instead the literature became confused over how to measure the phenomenon and even what the central variables were. Van Evera (1999) laid out five hypotheses ranging from false optimism for cre- ating the conditions for war to war being likely when conquest is easy. The paradigm stuttered and moved toward different versions of realism that were more parsimonious and not based on subjective perceptions of offensive power. A theorist's belief that offense is best is, at best, an outcome after the fact and, at worst, an outcome dependent on rational perceptions of the O/D balance. The ideal of the O/D balance, even if accepted that it is empirically accurate and measurable, is both doubtful and fails to motivate action clearly. States assuming a systemic offensive advantage might be deluded in their perspective, as happened during World War I, or they will go on the offense anyway due to the power of other motivating variables, such as a desire for a territorial claim.[6] Levy notes that "the concept of the offense/defense balance is too vague and encompassing to be useful for theoretical analysis."[7] Three core problems emerged on top of the issue of un- controllable outcomes not being impacted by post hoc reasoning. The first is that offense and defense are indistinguishable, or at least an observer cannot tell which is which. The second problem is that the foundation of theory is based on the rational perception	

	that there must be an advantage to offense or defense, either dyadically or systemically. This is based on the premise that leaders will make optimal choices. The final issue is how to measure the factor of offense/defense empirically. The Cyber Balance A misguided focus on the balance between offensive and defensive operations clouds under- standings of cyber strategy and forces practitioners toward language that does not describe the nature of cyber operations. It is nearly impossible to distinguish cyber actions between offense and defense and even more so difficult to measure said actions. To assume that the balance between offense and defense can be accurately measured and perceived by leaders requires the theorists to comport themselves into so many leaps of logic that the mental gymnastics become impossible. The developing field of cybersecurity quickly gravitated toward examining the O/D balance in cyber interactions due to the simplicity of the framework. For Healey (2021), it is not import- ant to understand who has the advantage, but under what conditions the framework operates. Such a view presumes that there is an advantage in the first place and that perceptions of the adversary can be known. The field of cyber conflict continues to build on early ideas by some such as Buchanan (2016), who noted that the offense is ascendant over the defense. Fischerkeller and Harknett have ad- vocated for the strategic doctrine of cyber persistence because the enemy is persistent and the only way to counteract an adversary's offensive cyber actions is to take even earlier offensive action.[8] Healey notes, "Since the beginnings of the internet, the offense often has *seemed to* have the advantage over the defense."[9] Unfortunately, there is no evidence that the offense has an advantage or that it is the best course of action in cybersecurity. Some arguments for offense dominance are based on the ubiquity of certain systems and companies, like Microsoft.[10] Since the Internet was never built for security in the first place, it stands to reason that it must then be largely insecure. Healey notes that defensive failures cascade and proper targeting can lead to offensive advantages.[11] The defense supposedly can never win against such adversaries due to their power and reach, the compounding nature of failure, and the specific difficulty of protecting all systems from known and unknown vulnerabilities. Themarketplaceofideasdoesprovidealternativeframeworks. Earlyresearchonallknowncy- ber	

interactionsdemonstrates restraint rather thanuncontrollable aggressionincyberspace.[12] In fact, escalation is rare[13] and retaliation nearly non-existent.[14] Early on, Gartzke and Lindsay noted the importance of deception in cyber operations, a form of defense mostly.[15] Slayton notes that the balance between defense and offense is conditional on organizational processes and the cost of the bureaucracy, not the raw impulses of the aggressive actor.[16] The remainder of this article examines three core flaws in theory of the O/D balance as it relates to cybersecurity.

DISTINGUISHING INDISTINGUISHABILITY

The key challenge for the issue of an offense/defense balance, or even simple discussions of the offense or defense in cyberspace, is that it is nearly impossible to distinguish between the two. How do you tell which is which? The fluidity of the concept of offense or defense makes the terms virtually useless, since it is near impossible to operationalize, the terms making the research imprecise. Moves that are said to be defensive involve forward maneuver that can seem offensive in nature. Offensive operations set to impose costs on the opposition are often thought to be defensive in nature, for example, indictments or sanctions against digital aggressors.

Terms on shaky definitional grounding are prone to conceptual stretching. The term “concep- tual stretching” was originally coined by Sartori, who connected the idea to the distortion that comes when a concept does not fit new cases.[17] This factor is at play often in cybersecurity where new cases confound observers. Does the US rerouting of server traffic for a ransomware group count as an offensive or defensive operation?[18] Certainly, the operation is proactive and involves foreign network space, but the operation is also not destructive or violent and rep- resents a move to protect the American homeland from ransomware attacks on civilian targets that seemingly plagued the US during the pandemic.

Ideas that defy basic categorization are prone to confirmation bias and the assumption that the measurement is correct when the term itself defies basic measurement. The “offense” and “defense” are terms that are difficult to operationalize. What exactly is an offensive and defen- sive operation in cyberspace? The problem is any desire to operationalize a difference between offensive and defensive operations is based on an artificial division of the problem. It is not a problem of being precise, but rather distinction. Much like the Dutch ideal of “total football,” the best defenders are also the best attackers.[19] They know the weak spots and where

to look for vulnerabilities; just as the best attackers are also the best defenders since they know the attack surface so well and can pinpoint weaknesses. The strategic logic between the distinction is empty, yet there is a logic to force allocation and structure that might require a division be- tween defensive and offensive forces, a distinction that remains artificial.

Cyber confusion pervades discussions of the offense and defense. Is a zero-day vulnerability (an unknown flaw) an offensive weapon? Some might suggest any unknown vulnerability can be exploited by the attacker. Yet it is just as likely that basic probes or vulnerability research on other targets will uncover the unknown vulnerability, and allow the defender to become stronger once the weakness is patched. An unknown vulnerability can be both defensive and offensive at the same time, making the idea of distinguishing between the two frames nearly impossible.

What of national cyber forces such as the Cyber Mission Force in the U.S. Cyber Command (USCYBERCOM) or the National Cyber Force in the UK? While these forces can go on the attack against other nation-states, they also can be posted as defensive operators seeking to stop attacks before they happen. The reality is that the active and adaptive nature of modern technology makes the idea of distinction between offense and defense entirely empty, resulting in the basic research question being almost meaningless.

PERCEPTIONS

A key foundation of the offense/defense balance is that perceptions will be optimal. One side will perceive either the offense or defense as having the advantage determining the probability for war. Yet, as critics have pointed out, “It is inherently difficult to assess the impact of weap- ons technologies, particularly when they have not been employed in war.”[20]

Glaser and Kaufmann note that versions of realism need to introduce a variable that converts power into military capabilities for the theory to be operational.[21] This becomes a key condi- tion to provide a mechanism for how the process of an O/D balance must work to influence the dependent variable, taking territory or winning wars. The remaining question is whether the perceptions of how technology creates military capability accurate?[22] How does a state decide if one is operating in an offensive- or defensive-dominant situation?

Views of cyber power and an emphasis on offensive dominance are really in the eye of the beholder. There is no standardized method of measuring cyber power. In a

	2018 book, Valeri- ano et al. developed a measure of latent cyber capacity measuring digital infrastructure and knowledge capital (engineering graduates and patents).[23] South Korea came out ahead of the US, China, Japan, and Israel, in that order. Clarke and Knake list a ranking of the US, Russia, China, Iran, and North Korea.[24] The Belfer Center National Cyber Power Index of 2020 ranks the US, China, and the UK (a new entry) as the top-three due to the inclusion of a variable for intent, which is coded subjectively based on readings of documents.[25] For cyber security, converting cyber power into military capabilities is a fraught enterprise. There is little evidence that cyber power is coercive, on either the diplomatic or military bat- tlefield. Kostyuk and Zhukov note there is no impact from cyber capabilities on the battlefield in Ukraine, a finding which appears to be holding strongly during the Ukraine War that began in 2022.[26] In a macro study, Valeriano et al. find little evidence of a coercive impact on inter- national relations, with most cyber events failing to change the behavior of the target.[27] When the target's behavior changes, it is often as a defensive maneuver to prevent future incursions. If the central mechanism of the O/D balance is the fact of coercive change through technology, cyber options play little role in this process. The problem is that, for some, cybersecurity is revolutionary, yet there is no evidence that cyber operations affect the battlefield.[28] There are assumptions of a Battlestar Galactica (2004) effect in which the opposition shuts down all weapons and communications making the tar- get's defenses inoperable to the point of fantasy. This perception of effectiveness, disconnected from the empirical reality of the impact on operations, demonstrates the pervasive power and inapplicability of O/D balance theory to cyberspace. In a domain that operates mostly without empirical evidence, anyone can perceive whatever he/she chooses, often based on fictions, yet the reality is often much different. The idea that a state's perception of the O/D balance can be accurately known by the oppo- sition is betrayed by the inability of the aggressor even to understand its operations and to optimize their security. That many misperceived the power of the offense on the eve of World War I should suggest that the theory is on shaky ground from the start.[29] Even proponents note "this also means that when states do engage in suboptimal behavior, our ability to deter- mine the offense-defense balance by observing military policies and war outcomes is greatly reduced."[30] Lynn-Jones argues that states which fail to	

accurately assess the arena and "adopt offensive strategies in a world of a defensive advantage will be punished by the system."[31]
The history of cyber security is a history of suboptimal security behavior since the domain was never developed with security in mind. Of course the policy failures have been constant.[32] Debate over whether the offense or defense has the advantage in cyberspace will never be resolved satisfactorily because security was an afterthought in the creation of the Internet. Hence, one must wonder just how critical the research question is when there are no accurate answers offered.

MEASUREMENT
The water's end for O/D balance is that it is simply impossible to measure the success or failure of the theory given the conditions laid out by its proponents. As Lynn-Jones notes, "The empirical rejection of the framework, plus the more complicated question of just how to measure what an offensive weapon is versus a defensive weapon, and the examined question of how to measure perceptions of these weapons, makes this framework problematic."[33] In ex- amining the efficacy of the theory statistically, Gortzak and Haftel find little empirical support for any of the theoretical propositions.[34]
Absent of measurement, scholars and policymakers are making predictions that can never be falsified. In short, we can never know if one is wrong, or right. In their effort to save the theo- ry of O/D balance in light of penetrating criticisms, Glaser and Kaufmann counter the idea that the theory cannot be measured "as simply incorrect."[35] They note "that the offensive-defensive balance should be defined as the ratio of the cost of the forces that the attacker requires to take territory to the cost of the defender's forces." A line in the sand clearly drawn by scholars, but this point is also degenerative from the earlier grand positions of the O/D balance as the key factor in explaining war and peace.[36]
The reformation of O/D balance as simply the ratio of costs for the attacker versus the costs to defend territory is inoperable for cyber security for one simple reason: there is no territory to take. In its simplest form, cybersecurity is about maintaining networks and protections to ensure that systems operate. One can knock out a system, distract the opponent, or confuse a target but the opposition will always recover at some point. There is rarely a conception of destruction in cyberspace and, although some materials can be destroyed, they can also be quickly restored.[37] While some might use the language of maneuver and

gaining ground in cyberspace, there is no ground to take.[38]

The challenge of distinction then returns: how would one measure the costs to defend versus the costs to attack? Glaser and Kaufmann dismiss all these challenges to suggest that "ball- park estimates of the balance may be sufficient," demonstrating how shaky the premise is in operation.[39] Healey supports this notion by writing, "Exact measurements may be difficult but fortunately are not needed, as the scale and magnitude of the trends should be enough to determine the relative advantage over time between offense and defense."[40]

While it might be simple to classify the O/D balance in the abstract, would one classify USCYBERCOM as offensive and the Department of Homeland Security (DHS) as defensive? Failures at such simple distinctions reveal the fluidity of computer network operations and the pace at which bureaucratic organizations operate and share talent. There is also the compound issue of how to measure the cost of a bureaucracy. Operation costs vary by year and often fail to factor in the costs of training and education outside the network security realm. In short, time and the nature of organization matter a great deal in cyber security when considering the measurement of the O/D balance.[41]

While it is difficult to measure O/D balance in any formation based on a dyadic notion of contestation between two entities, it is even more difficult to measure O/D balance in its wid- er systemic sense. In short, how to do we classify eras exactly? The issue of perceptions re- turns. How would one know if a set of years under examination is offensive-dominant, espe- cially in light of any objective means of assessment of cyber security operations?[42] Regardless of the academic debates on the nature of the O/D balance, the uncertainty that results from the discussion regarding measurement should give anyone pause in the belief that cyber opera- tions can be classified as offensive or defensive.

FUTURE TASKS

Questions that lack a theoretical grounding or a method of empirical observation to adjudi- cate outcomes inevitably lead down degenerative pathways, a problem that often pervades the cybersecurity literature. Assuming that there is a distinction between offense and defense ignores the fact that, in practice, the two are impossible to distinguish. Because there is no distinction between the two in practice means that it is impossible to measure the success or failure, which makes the theory indeterminate. Sometimes one must reject the basic premise of a research

	question if it does not help one understand an issue or provide solutions. The lessons extracted from this article are very simple. The stopping point for applying O/D balance theory to cyber operations is that it is impossible to distinguish the attack from the defense in cyber security. Effective operationalization of theory is the key consideration. The inability to create a definition that clearly categorizes the two supposed sides of military oper- ations suggests the theory is unworkable in cyber security. It is not that cyber security cannot be measured and operationalized, but that doing so must be done carefully and should be scientifically valid.[43] There are times when dividing between the offense and defense does make sense. To proper- ly allocate forces, it sometimes becomes necessary to group forces into offense and defense. It might be critical bureaucratically to distinguish between the two sides of offensive and defen- sive forces, yet this practice is also artificial and often restrains the career paths of defensive operators. Conflict is a continuum. States build toward conflict; little actions taken can add up and interact with big factors such as territoriality to produce warfare. Distinguishing between of- fensive and defensive eras has no impact on these actions that lead to war, but it might be able to highlight when a war might occur. This is an interesting proposition but one that requires an accurate reading of perceptions in the domain and the shape of the balance, a near impos- sibility in cybersecurity. The premise of O/D balance theory provides poor policy advice, and sometimes leads policy- makers to propose offensive operations when these operations might be unsuited for the do- main or, worse, ineffective. Ignoring efforts to establish resilience is a certain condition toward instability and further conflict. The reality is that O/D balance theory is troubling because it minimizes the need for defense and focuses on the magic bullet of emergent technology. While some might argue that we have failed to establish effective defense for cyber operations, the reality is that states have rarely tried to do the defense correctly due to bureaucratic issues, money, lack of knowledge, or the pull of the offense. The misapplied and dangerous conjecture that the best defense is a good offense must end. The best defense is a real defense. IV. Выполните следующие задания: ***1. Listen to a conversation between two nuclear engineers. Mark the following statements as true (T) or***	

	false (F). 1. ___ The woman is working on a new ICF machine. 2. ___ The machine will use ohmic heating. 3. __ The woman's team is researching ignition temperatures. ***Listen again and complete the conversation.*** **Engineer 1:** Yes, it is. Government **1. _____** just agreed to my team's plans. **Engineer 2:** Congratulations. **2. _____ _____** are those? **Engineer 1:** We hope to build a new **3. _____ _____**. Then, we'll compare it to our current ICF machine. **Engineer 2:** That sounds challenging. You're using **4. _____ _____**, right? **Engineer 1:** Actually, we're considering an **5. _____ _____**. **Engineer 2:** Really? I thought that was less effective. **Engineer 1: 6. _____ _____** some tests now to find out. **Speaking** ***With a partner, act out the roles below based on the listening task above. Then, switch roles.*** USE LANGUAGE SUCH AS: What plans are those? That sounds... Really? Student A: You are an engineer. Talk to Student B about: • your current research • tests you are conducting • his or her recommendations Student B: You are an engineer. Talk to Student A about his or her new project.	

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1. А. А. Преображенская- "Деловая переписка на английском языке", (2-е изд., испр.), Издательство: "Национальный Открытый Университет «ИНТУИТ»", Москва, 2016 - (72 с.)
https://biblioclub.ru/index.php?page=book&id=429121;

2. Васильева Р. М., Клушин Н. А., Кузьминов В. Г.- "Некоторые способы преодоления трудностей при написании и переводе научно-технических текстов с английского языка на русский и с русского языка на английский (лексико-фразеологический аспект)", Издательство: "ННГУ им. Н. И. Лобачевского", Нижний Новгород, 2016 - (45 с.)
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