



**Youth Section of
CIGRE Russian National Committee
Ivanovo State
Power Engineering University**

INTERNATIONAL STUDENT COMPETITION ON THEORETICAL AND GENERAL ELECTRICAL ENGINEERING

«ELECTRICAL ENGINEERING- 2014»

(APRIL 22-24, 2014, IVANOVO, RUSSIA)



IVANOVO 2014

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1. GENERAL INFORMATION ABOUT THE COMPETITION «ELECTRICAL ENGINEERING-2014»

Introduction

In order to develop individual creative thinking, to increase educational process effectiveness, students' involvement in scientific research work as well as to find out talented students, it was decided to organize *The Annual International Student Competition on Theoretical and General Electrical Engineering* at Faculty of Electrical Power Engineering (Ivanovo State Power Engineering University, ISPEU) on 22-24 of April 2014.

The main contents and the results of work

Preparations for the competition began in November, 2013.

More than 40 Russian and foreign higher educational institutions, which prepare specialists in electrical engineering sphere, were invited to take part in this competition. Many of them became interested in such arrangement and 20 higher educational institutions applied for their taking part in it. Two Ukrainian higher educational institutions (Donetsk National Technical University (DonNTU)) and (Kharkiv National University of Radio Electronics (NURE)) were not able to participate because of the objective reasons. There was an agreement with Supelec, French graduate school of engineering, for taking part in the competition, but in consequence of difficulties with visas its participation was postponed till the next year.

According to the competition regulations the teachers of Department of electric engineering and electrotechnics foundations of Electrical Engineering faculty (ISPEU) prepared 7 qualification tasks on 4 main sections of theoretical basics of electrical engineering (TBEE) course: dc circuits, ac circuits including nonsinusoidal current, three-phase circuits, transients in linear electric circuits. The teachers from Saint Petersburg Electrotechnical University, National Research Tomsk Polytechnic University, Ural Federal University and other higher educational institutions also prepared tasks

ISPEU has also formed the team to participate in the competition. It was organized according to the results of the ISPEU Open Competition on TBEE. Training lessons for better preparation of our students for the international competition were organized.

The announcements with all the necessary information about the competition for students and guests were prepared and placed on the stands in all ISPEU buildings 7 days before the competition started. The information about the competition was also posted on ISPEU and CIGRE official sites.

Mobile stands with the symbols of ISPEU, sponsors and competition were also made.

On 20-22 April the meeting of the participating teams and their accommodation in *Ivanovo* hotel was organized. The coach tour around Ivanovo for the participants was held on the 22nd of April.

The competition itself took place on the 23rd of April, 2014 in rooms B-301, B-316. The teams from 19 higher educational institutions took part in it:

- Kazakh National Technical University (Almaty, Kazakh Republic)
- Belarusian National Technical University (Minsk, Republic of Belarus)
- Vologda State University (Vologda, Russia)
- South-Russian State Polytechnic University (Novocherkassk, Russia)
- Kovrov State Technological Academy (Kovrov, Russia)
- Ivanovo State Power Engineering University (Ivanovo, Russia)
- Kazan State Energetic University (Kazan, Tatarstan Republic)
- Saint Petersburg Electrotechnical University “LETI” (Saint-Petersburg, Russia)
- Novosibirsk State Technical University (Novosibirsk, Russia)
- National Mineral Resources University «University of Mines» (Saint-Petersburg, Russia)
- Samara State Technical University (Samara, Russia)
- National Research Tomsk Polytechnic University (Tomsk, Russia)
- Rybinsk State Aviation Technical University (Rybinsk, Russia)
- Ivanovo State University of Chemistry and Technology (Ivanovo, Russia)
- Kostroma State Agricultural Academy (Kostroma, Russia)
- National Research Irkutsk State Technical University (Irkutsk, Russia)
- Penza State University (Penza, Russia)
- Ural Federal University (Yekaterinburg, Russia)
- National Research South-Ural State University (Chelyabinsk, Russia)

121 students took part in the individual championship.

The coach tour to Kostroma State District Power Plant was held for the students right after the Competition.

Team championship results:

Place	Higher educational institution
I	Novosibirsk State Technical University
II	Ural Federal University
	Ivanovo State Power Engineering University
III	Saint Petersburg Electrotechnical University “LETI”
	Kazan State Energetic University
	Belarusian National Technical University
IV	National Research Tomsk Polytechnical University
V	South-Russian State Polytechnic University
VI	National Research South-Ural State University
VII	National Research Irkutsk State Technical University
VIII	Penza State University

Place	Higher educational institution
IX	Samara State Technical University
X	Kazakh National Technical University
XI	National Mineral Resources University «University of Mines»
XII	Kostroma State Agricultural Academy
XIII	Rybinsk State Aviation Technical University
XIV	Kovrov State Technological Academy

The results of the individual championship:

Place	Name Surname	Higher educational institution	Points
I	Gleb Nesterenko	Novosibirsk State Technical University	59
II	Roman Tjutin	Novosibirsk State Technical University	54
III	Il'ja Tarasov	National Research Irkutsk State Technical University	52

The 4th year ISPEU student, Sergei Kononov, took part out of competition because of “*The Regulations on International Student Competition on Theoretical and General Electrical Engineering*” and come the head of overall ranking. That’s why the jury made the decision to award him with the diploma “For the 1st Prize on overall ranking” and JSC "Territorial Generating Company #2" presented him the certificate for 10000 rubles.

The rewarding of the competition participants took place 24 April, 2014. The winners were awarded with the diplomas, presents and books on electrical engineering.

After the rewarding there the round-table discussion *Electrotechnical Education: Problems and Prospects* was organized.

The results of the competition were posted on CIGRE Russian National Committee and ISPEU official sites.

Conclusion

There were no serious disadvantages and failures during the organization and holding of the competition. All the participants noted a high level of competition preparation and holding. The experience of using the competition tasks prepared by the teachers of participating higher educational institutions, was very successful. It seems to be appropriate to enlarge the number of participants from other countries and areas (the Far East, France, Germany, China).

2. THE COMPETITION RULES OF PROCEDURE



RULES OF PROCEDURE
INTERNATIONAL STUDENT COMPETITION
ON THEORETICAL AND GENERAL ELECTRICAL ENGINEERING

1. GENERAL RULES

1.1. International student competition (ISC) is held as a students' competition in creative application of knowledge and skills got in higher educational institutions while studying different subjects as well as the professional readiness of future specialists.

1.2. ISC is held for improving the process of learning as well as improving the quality of specialists' preparation, increasing students' interest for their profession, finding out talented young people and forming personnel potential to organize research, administrative, production and business activity.

1.3. According to the plan of youth arrangements of the Youth section of CIGRE Russian National Committee (RNC) Ivanovo State Power Engineering University holds the International Student Competition on Theoretical and General Electrical Engineering (hereinafter referred to as Competition) among the students of electrotechnical and electrical power specialities.

2. THE COMPETITION ORGANIZATION

2.1. The organizer of the Competition is Non-commercial partnership "International Council on Large Electric Systems, Russian National Committee" (Moscow, **CIGRE RNC**) and Ivanovo State Power Engineering University (Ivanovo, **ISPEU**).

2.2. The organizational committee, which is formed by ISPEU vice-rector on the research work, realizes general management and the Competition organization. The chairman of the organizational committee is ISPEU vice-rector on the research work.

2.3. The organizational committee of the Competition:

- works out “*The Regulations on International Student Competition on Theoretical and General Electrical Engineering*”
- carries out the preparatory arrangements before the Competition;
- determines the dates of the Competition, provides the working places and technical equipment for the Competition;
- informs potential participants (electrotechnical higher educational institutions) about the Competition;
- forms the jury of the Competition, the credentials committee, the appel committee;
- organizes the acceptance and processing of applications for the participation in the Competition;
- takes the decision on the admission to participate in the Competition;
- organizes and carries out the rewarding of winners;
- publicises the information about the results of the Competition and its winners.

2.4. The jury of the Competition:

- is formed from the specialists on electrical engineering from ISPEU and other higher educational institutions, whose students take part in the Competition;
- works up and approves theoretical and practical tasks according to the State educational standard;
- works up mark system in points in accordance with the difficulty of the task;
- checks up and assesses the works of the participants in a ciphering mode;
- analyzes completed tasks, determines the winners.

2.5. The Credentials committee:

- consists of the representatives of ISPEU;
- checks up the authorities of the participants of the Competition;
- carries out the encrypting and decrypting of works.

The members of the credentials committee do not belong to the jury.

2.6. The appel committee:

- consists of the specialists of ISPEU and the team representatives of other higher educational institutions (which take part in the Competition);
- examines conflict questions of the participants of the Competition.

2.7. In addition to the members from ISPEU the jury also consists of the team representatives or teachers from other higher educational institutions, which take part in the Competition.

2.8. The Competition tasks can include the tasks worked out by the electrical engineering specialists from other higher educational institutions, which are the participants of the Competition;

2.9 Appeals may be lodged not later than 10 p.m. the next day.

2.10. The meeting of the organizational committee, the jury, the credentials committee and the appel committee are recorded and signed by the chairman of the organizational committee.

2.11. The winners are awarded with financial prizes and diplomas: the first prize is 5 000 rubles, the second prize – 3 000 rubles, the third prize – 1 000 rubles.

2.12. Photos and brief information about the winners, who placed high, can be placed on the official site of CIGRE RNC.

2.13. Photos and brief information about the winners can be given to the personnel departments of organizations of electrical engineering sphere.

2.14. The documents and materials connected with the Competition carrying out, are kept in the organizational committee during 1 (one) year after the date of taking decision about the summing-up and winners determining.

3. THE COMPETITION HOLDING PROCEDURE

3.1. The terms of the Competition holding.

The participants of a team are full-time students studying electrical engineering in the current academic year. The Competition has the individual and the team championship. The number of the participants from every higher educational institution is not more than 7 students. Total number of points in team championship is a sum of five best student points.

The team is represented by a leader who is a teacher or a staff member of a higher educational institution. The leader is the member of the jury of the Competition. Each participant should have a passport and student's card (or academic record book).

As an exception the higher educational institution, which is the organizer of the Competition, is allowed to present two teams.

3.2. Methods and the Competition holding procedure

Competition participants take seats in such a way as to prevent communication between the team members of one institution.

Before entering the lecture-hall students are registered in participant list of the Competition. After the registration they are given personal cipher and an envelope which contains title-pages, rough and fair sheets. The list with the surnames and personal ciphers is sealed into the envelope and kept at the chairman of the Credentials committee. Statement of a problem and the table with the place for the participant's personal cipher are printed on the title-pages. Participants of the Competition fill in the title-page (insert their personal ciphers into the table), which are handed in with rough and fair sheets. When the time of competition start is announced the students are allowed to open the envelopes and begin to solve the qualification tasks. The solution is written on title-pages and fair sheets on their both sides.

When solving the problems, the students are allowed to use printed and written sources of information, nonprogrammable calculators, but it is forbidden to use mobile phones, notebooks and other electronic communications facilities. The jury can disqualify the participant or the team who violate this requirement.

When the time of the Competition is up, the participants put their title-pages and sheets into the envelope and hand it in. Fair sheets are handed to the members of the jury to check them up. Rough sheets are put into another envelope and are also given to the members of the Competition jury.

3.3. Checking up and the assessment of the works

The members of the jury check up the works and put the number of points got for the work in the spreadsheet opposite the cipher of this work not later the next day after the Competition holding. They also sign in the spreadsheet opposite their records.

When assessing the works the members of the jury take into consideration:

1. the quality of students' material understanding;
2. the level of knowledge should be higher than it is necessary for the curriculum;
3. a creative approach in choosing the ways of solving the problems given.

The report of the Competition holding is filled in and signed first by the Coordinator of the Competition and then by all the members of the Competition jury.

The winners are determined after filling the column "The Number of Points" in the spreadsheet.

If several students pretend to be the laureates, having got the same number of points, the jury reassesses their works up and determines the first three winners after the comparative analysis of their fair and rough sheets. In this case the decision of the jury is recorded specially as well as the opinion of individual members of the jury. The reassessing of the works of possible laureates is done before the deciphering.

The deciphering of all the works is done only after the spreadsheet is filled in completely and the winners are determined.

3.4. Determination of the winners

Leaders in personal championship are determined according to the sum of the points got for the solution of each task. The winners (the 1st, the 2nd and the 3rd prizes) are determined among the students of higher educational institutions according to the sum of the number of points.

The place of the higher educational institution in team championship is determined according to the sum of the points got by members of the team.

The final results of the Competition form report and it is approved by ISPEU vice-rector on the research work.

Winners of the Competition in each higher educational institution are presented in the organizational committee report and it is placed on CIGRE RNC and ISPEU official sites.

3.5. Awarding of the winners

The winners of the Competition in the individual and team championship are awarded with the diplomas of the higher educational institution, which is the organizer of the Competition. All the participants of the Competition get the certificates.

The leader of the Youth section

CIGRE RNC in ISPEU,

the head of the Competition organisation



Makarov A.V.

The Coordinator of the Competition



Morozova D.Y.

3. PUBLIC INFORMATION NOTICE



The Ministry of Education and Science of the Russian Federation
“Ivanovo State Power Engineering University” (ISPEU)
Joint-stock Company “System Operator of the United Power System” (SO UPS)
“Russian National Committee of International Council on Large Electric Systems” (CIGRE RNC)



ELECTRICAL ENGINEERING-2014

INTERNATIONAL STUDENT COMPETITION
ON THEORETICAL AND GENERAL ELECTRICAL ENGINEERING
IVANOVO, RUSSIA
April 22-24, 2014



PUBLIC INFORMATION NOTICE

International Student Competition

on Theoretical and General Electrical Engineering

April 22-24, 2014, Ivanovo, Russia

According to the plan of joint arrangements for the year of 2014 Ivanovo State Power Engineering University (ISPEU) and CIGRE Russian National Committee (RNC) with the support of System Operator of the United Power System (SO UPS), JSC "Territorial Generating Company #2", JSC “Russian Grids” hold the International Student Competition on Theoretical and General Electrical Engineering among the students of electrotechnical and electrical power specialities.

The aim

Improving the quality of specialists' preparation in electrotechnical and electrical power specialities, increasing students' interest for their profession, finding out talented young people and forming personnel potential to organize research, project and administrative production activity.

The program of the competition

- April 22** arrival and registration of the participants;
- April 23** the Competition holding;
- April 24** the closing ceremony of the Competition, the winners' awarding, the departure.

Language

Russian

The place of the Competition

Lecture-rooms in ISPEU (34, Rabfakovskaya Str., Ivanovo, Russia).

Staying: ISPEU and Ivanovo hotels.

The terms of the Competition

The participants of a team are full-time students studying theoretical basics of electrical engineering (general electrical engineering) **in the current academic year**. The Competition has the individual and the team championship. The number of the participants from every higher educational institution is not more than 7 students. Total number of points in team championship is a sum of five best student points. If the team consists of less than 4 students, they can take part only in the individual championship. Each participant should have a passport and student's card (or academic record book). The team is represented by a leader who is a teacher or a staff member of a higher educational institution. The leader is the member of the jury of the Competition.

The Competition tasks may be the ones prepared by the teachers of the theoretical basics of electrical engineering of other higher educational institutions, which take part in the competition. In order to take part in the Competition it is necessary to fill in the application form and send it on e-mail: cigre@ispu.ru. The deadline is **March 5, 2014**. The tasks to be included in the list of the Competition tasks should be sent on e-mail: olimpiada@toe.ispu.ru, not later than **March 31, 2014**.

The participation in the Competition is confirmed with the application form on the higher educational institution note-paper certified by a person in charge and the seal of the institution (it may be sent by mail or taken to the organizational committee by the team leader). The participation in the Competition is free. The expenditure for meals, journey and staying in the hotel are at the expense of the funds of the sending institution. To reserve the hotel it is necessary to send the application form before **05.03.2014** r. Team leader's and students' are to stay in ISPEU and Ivanovo hotels. The coach tour to Kostroma State District Power Plant is included into the cultural program of the Competition.

Tasks subjects

1. DC circuits.
2. AC circuits including nonsinusoidal current.
3. Three-phase circuits.
4. Transients in linear electric circuits of the first and the second order.

Important dates

1.	The application form for taking part in the Competition	deadline 05.03.2014
2.	The application form for hotel reservation	deadline 02.04.2014
3.	The participants' arrival and registration	22.04.2014г.
4.	The Competition holding	23.04.2014г.
5.	Closing ceremony of the Competition, the winners' awarding, the departure	24.04.2014г.

THE ORGANIZATIONAL COMMITTEE

Vladimir Tutikov,

the chairman of organizational committee of the Competition, the vice-rector of ISPEU.

Andrey Gofman,

the vice-chairman, the leader of the organizational committee of Youth Section of CIGRE Russian National Committee

Arkadiy Makarov,

the vice-chairman, the head of the Competition organization,

tel. (4932) 269-945, +7-920-671-45-37, e-mail: makarov@ispu.ru

The information about the Competition is posted on the University website: www.ispu.ru (data messages, the regulations on the Competition, subjects and examples of the Competition tasks, the chart of the ways getting to the University buildings and to Ivanovo hotels).

The organizational committee reserves to itself the right of making insignificant alterations in the program of the competition.

4. THE ANNOUNCEMENT



ELECTRICAL ENGINEERING - 2014

INTERNATIONAL STUDENT COMPETITION ON THEORETICAL AND GENERAL ELECTRICAL ENGINEERING

April 23, 2014

rooms **B-301, B-316**

- 8:30 - 9:00** Photo-session of the participants of the Competition
- 9:00 - 9:15** Opening ceremony of the Competition
(the **Assembly Hall, building B**)
- 9:15 - 9:30** Registration and ciphering of the participants of the Competition
- 9:30 - 13:30** The Competition carrying out

The following higher educational institutions participate in the Competition:

Kazakh National Technical University (Almaty, Kazakh Republic), Belarusian National Technical University (Minsk, Republic of Belarus), Vologda State University (Vologda, Russia), South-Russian State Polytechnic University (Novocherkassk, Russia), Kovrov State Technological Academy (Kovrov, Russia), Ivanovo State Power Engineering University (Ivanovo, Russia), Kazan State Energetic University (Kazan, Tatarstan Republic), Saint Petersburg Electrotechnical University "LETI" (Saint-Petersburg, Russia), Novosibirsk State Technical University (Novosibirsk, Russia), National Mineral Resources University «University of Mines» (Saint-Petersburg, Russia), Samara State Technical University (Samara, Russia), National Research Tomsk Polytechnic University (Tomsk, Russia), Rybinsk State Aviation Technical University (Rybinsk, Russia), Ivanovo State University of Chemistry and Technology (Ivanovo, Russia), Kostroma State Agricultural Academy (Kostroma, Russia), National Research Irkutsk State Technical University (Irkutsk, Russia), Penza State University (Penza, Russia), Ural Federal University (Yekaterinburg, Russia), National Research South-Ural State University (Chelyabinsk, Russia)

Further information: www.ispu.ru

5. THE PROGRAM OF THE COMPETITION



The Ministry of Education and Science of the Russian Federation

“Ivanovo State Power Engineering University” (ISPEU)

“System Operator of the United Power System” (SO UPS)

“Russian National Committee of International Council on Large Electric Systems” (CIGRE RNC)



ELECTRICAL ENGINEERING-2014

INTERNATIONAL STUDENT COMPETITION
ON THEORETICAL AND GENERAL ELECTRICAL ENGINEERING
IVANOVO, RUSSIA
April 22-24, 2014



INTERNATIONAL STUDENT COMPETITION ON THEORETICAL AND GENERAL ELECTRICAL ENGINEERING April 22-24, 2014

The program of the Competition for the participants

April 22, Tuesday

- 0:00 – 24:00 Arrival and meeting of the participants of the Competition. Accommodation in the hotel.
- 11:30 – 13.30 Sightseeing tour about Ivanovo (**gathering in the hotel hall, the ground floor, 11.15**)

April 23, Wednesday

- 8:00 – 8:30 Transfer of the participants from the hotel to ISPEU
- 8:40 – 9:00 Photo-session of the participants of the Competition (**lobby near the Assembly Hall, building B**)
- 9:00 – 9.15 Opening ceremony of the Competition (**the Assembly Hall, building B**)
- 9:15 – 9:30 Registration and ciphering of the participants of the Competition (**B-301, B-316**)
- 9:30 – 13:30 The Competition carrying out (**rooms B-301, B-316**)
- 13:30 – 14:15 Lunch
- 14:30 – 19:00 Coach tour to Kostroma State District Power Plant (**gathering in the hall of building B, the ground floor**)
- 19:00 – 21:00 Gala-dinner
- 21:00 – 21:30 Transfer of the participants to the hotel

April 24, Thursday

- 12:30 – 13:00 Summing-up the results of the Competition. Rewarding the winners (**room B-240**)
- 13:00 – 14:00 Youth round-table discussion *Electrotechnical Education: Problems and Prospects*
- 14:00 Departure

6. THE COMPETITION, SPONSORS AND ISPEU POSTERS

The poster of the Competition

Российский Национальный Комитет IGRE Молодежная секция
 Ивановский государственный энергетический университет им. В.И. Ленина 1930
 СИСТЕМНЫЙ ОПЕРАТОР ЕДИНОЙ ЭНЕРГЕТИЧЕСКОЙ СИСТЕМЫ

ELECTRICAL ENGINEERING

INTERNATIONAL STUDENT COMPETITION ON THEORETICAL AND GENERAL ELECTRICAL ENGINEERING

$$u_c + R_1 C \frac{du_c}{dt} = u$$

$$L \frac{di_2}{dt} + R_2 i_2 = u$$

ISPEU
 34, Rabfakovskaya Str., Ivanovo, Russia
www.ispu.ru

organizational committee:
 tel: +7 (4932) 26-99-45
 e-mail: nirs@ispu.ru

The poster of the Competition (in Russian)

Российский Национальный Комитет IRE Молодежная секция

Ивановский государственный энергетический университет им. В.И. Ленина 1930

СИСТЕМНЫЙ ОПЕРАТОР ЕДИНОЙ ЭНЕРГЕТИЧЕСКОЙ СИСТЕМЫ

ЭЛЕКТРОТЕХНИКА

МЕЖДУНАРОДНАЯ СТУДЕНЧЕСКАЯ ОЛИМПИАДА ПО ТЕОРЕТИЧЕСКОЙ И ОБЩЕЙ ЭЛЕКТРОТЕХНИКЕ

ИГЭУ имени В.И. Ленина
г. Иваново, ул. Рабфаковская, д. 34.
www.ispu.ru

Оргкомитет:
тел: +7 (4932) 26-99-45
e-mail: nirs@ispu.ru

$$u_C + R_1 C \frac{du_C}{dt} = u$$
$$L \frac{di_2}{dt} + R_2 i_2 = u$$

Charity fund «Reliable Young Generation»



**Оператор подготовки кадров
для электроэнергетики**

Благотворительный Фонд "Надежная смена"
620075, Россия, г. Екатеринбург, ул. Толмачева, 6

www.fondsmena.ru

OJSC «The System Operator of the United Power System»



**СИСТЕМНЫЙ ОПЕРАТОР
ЕДИНОЙ ЭНЕРГЕТИЧЕСКОЙ СИСТЕМЫ**

**Партнер ИГЭУ
в подготовке
инженеров-энергетиков**

ОАО «Системный оператор Единой энергетической системы»
109074, Россия г. Москва, Китайгородский проезд, д. 7, стр. 3

www.so-ups.ru

JSC "Territorial Generating Company #2"



Партнер ИГЭУ
в подготовке
инженеров-энергетиков

ОАО «Территориальная генерирующая компания №2»
150040, г. Ярославль, ул. Рыбинская, 20
www.tgc-2.ru

Телефон: +7 (4852) 79-73-94
Факс: +7 (4852) 32-00-05
e-mail: energy@tgc-2.ru

The logotype of CIGRE Russian National Committee



ISPEU logotypes



7. REPORT #1

E-301

Report #1

Participant list of International Student Competition on Theoretical and General Electrical Engineering, April 23, 2014

№	Ф.И.О.	Курс- группа	Шифр
1	Абаджи Александр Михайлович	КГСХА	Э-001
2	Абрамова Мария Юрьевна	ИГЭУ	Э-002
3	Абрамова Яна Сергеевна	ИГЭУ	Э-003 Э-003
4	Абуллаев Бауыржан Муратович	КазНТУ	Э-004
5	Анненков Евгений Александрович	ЮРГПУ	Э-005
6	Аристархов Кирилл Михайлович	ИГХТУ	Э-006
7	Бакытжан Эсел Бакытжанкызы	КазНТУ	Э-007
8	Балах Эдуард Геннадьевич	УРФУ	Э-008
9	Басова Анастасия Евгеньевна	ИГЭУ	Э-009
10	Бедов Сергей Алексеевич	ИГЭУ	Э-010 Э-010
11	Белбородов Кирилл Юрьевич	ТПУ	Э-011
12	Беспалов Владимир Иванович	СамГТУ	Э-012 Э-012
13	Биченов Дмитрий Александрович	ПГУ	Э-013
14	Боровской Вячеслав Евгеньевич	ИРГТУ	Э-014
15	Булка Дмитрий Алексеевич	БНТУ	Э-015
16	Бутылин Игорь Андреевич	ЛЭТИ	Э-016
17	<i>Андреев Алексей Евгеньевич</i>	<i>ИРГТУ</i>	Э-017
18	<i>Абу, об Абдуллаев Бауыржан</i>	<i>КазНТУ</i>	Э-018

Report #1

Participant list of International Student Competition on Theoretical and General
Electrical Engineering, April 23, 2014

№	Ф.И.О.	Курс- группа	Шифр
19	Васильков Олег Сергеевич	Горный	Э-019
20	Введенский Никита Евгеньевич	ИГЭУ	Э-020
21	Велигура Сергей Александрович	ЮРГПУ	Э-021
22	Винников Владислав Александрович	ИРГТУ	Э-022
23	Виноградова Дарья Сергеевна	ИГЭУ	Э-023
24	Витязев Артем Сергеевич	БНТУ	Э-024
25	Воронин Сергей Валерьевич	ТПУ	Э-025
26	Воронцов Денис Валерьевич	ИРГТУ	Э-026
27	Гончаров Антон Сергеевич	ИГЭУ	Э-027
28	Гончаров Егор Николаевич	БНТУ	Э-028
29	Григорьев Артем Сергеевич	ТПУ	Э-029
30	Григорян Анаит Сергеевна	ЛЭТИ	Э-030
31	Добровольский Илья Сергеевич	РГАТУ	Э-031
32	Добровольский Николай Александрович	ЛЭТИ	Э-032
33	Духова Марина Александровна	РГАТУ	Э-033
34	Дэулетяр Райхан Талгаткызы	КазНТУ	Э-034
35	<i>Воробьева Мария Владимировна</i>	<i>ВолГУ</i>	Э-035
36	<i>Ворогнев Денис Вилгорович</i>	<i>КГТА</i>	Э-036

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№	Ф.И.О.	Курс- группа	Шифр
37	Елина Екатерина Дмитриевна	КГТА	Э-037
38	Елкин Александр Владимирович	СамГТУ	Э-038
39	Елькин Дмитрий Александрович	СамГТУ	Э-039
40	Ени Сергей Михайлович	КГСХА	Э-040
41	Еремейчук Анна Николаевна	ЮРГПУ	Э-041
42	Ершов Никита Владимирович	Горный	Э-042
43	Жабасов Тамирлан Касимбекулы	ТПУ	Э-043
44	Журавков Антон Дмитриевич	КазНТУ	Э-044
45	Журавлев Егор Дмитриевич	БНТУ	Э-045
46	Зотова Мария Владимировна	ИГЭУ	Э-046
47	Зуевский Игорь Геннадьевич	ЮРГПУ	Э-047
48	Зюзин Александр Владимирович	РГАТУ	Э-048
49	Иванова Наталья Сергеевна	ИГЭУ	Э-049
50	Идрисов Ринат Рафисович	УРФУ	Э-050
51	<i>Конюшев Иван Андреевич</i>		Э-051
52			Э-052

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№	Ф.И.О.	Курс- группа	Шифр	
53	Кадочников Дмитрий Юрьевич	ЮУрГУ	Э-053	Э-053
54	Кадыров Артур Сергеевич	КГТА	Э-054	Э-054
+ 55	Казарин Артем Станиславович	ИГЭУ	Э-055	
+ 56	Карманова Юлия Александровна	ИГЭУ	Э-056	
+ 57	Карташова Татьяна Павловна	ЮРГПУ	Э-057	
+ 58	Кокурин Александр Александрович	КГСХА	Э-058	
59	Колобов Александр Сергеевич	КГТА	Э-059	Э-059
+ 60	Кононов Сергей Андреевич	ИГЭУ	Э-060	
61	Коноплева Любовь Михайловна	ИГЭУ	Э-061	Э-061
+ 62	Копалов Александр Иванович	ИГЭУ	Э-062	
63	Котов Юрий Николаевич	ИГЭУ	Э-063	Э-063
64	Кравченко Максим Игоревич	ИГЭУ	Э-064	Э-064
+ 65	Кузнецов Сергей Андреевич	КГСХА	Э-065	
66	Кузнецова Юлия Андреевна	ИГЭУ	Э-066	Э-066
+ 67	Куликов Антон Алексеевич	УРФУ	Э-067	
+ 68	Кунц Алина Владимировна	КГСХА	Э-068	
69	Куприн Илья Вадимович	ИГЭУ	Э-069	Э-069
70	Курицын Иван Николаевич	ИГЭУ	Э-070	Э-070
+ 71	<i>Карабут Екатерина Викторовна</i>	<i>ИГТУ</i>	Э-071	
+ 72	<i>Кузнецов Кирилл Эдуардович</i>	<i>УРФУ</i>	Э-072	

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№	Ф.И.О.	Курс- группа	Шифр
73	Лебеденко Михаил Сергеевич	ЛЭТИ	Э-073
74	Лобов Андрей Александрович	КГТА	Э-074 Э-074
75	Лукьянов Владимир Иванович	ЮРГПУ	Э-075
76	Луньков Иван александрович	ИГЭУ	Э-076 Э-076
77	Макеев Александр Павлович	Горный	Э-077
78	Максименко Александр Сергеевич	ЮУрГУ	Э-078
79	Марач Ярослав Михайлович	ИРГТУ	Э-079
80	Матвеев Иван Сергеевич	ЛЭТИ	Э-080
81	Меркулов Александр Юрьевич	ИГЭУ	Э-081
82	Меркурьев Владислав Юрьевич	ИГЭУ	Э-082 Э-082
83	Михненко Владислав Геннадьевич	БНТУ	Э-083
84	Михолап Егор Николаевич	БНТУ	Э-084
85	Мурашкин Михаил Кириллович	УРФУ	Э-085
86	Мурашко Андрей Владимирович	БНТУ	Э-086
87	Мухаматяров Румиль Ринатович	КГЭУ	Э-087
88	Мухтарбеков Сэкен Толегенулы	КазНТУ	Э-088
89	<i>Максимов Игорь Владимирович</i>		Э-089
90	<i>Молыбренко Никита Сергеевич</i>		Э-090

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№	Ф.И.О.	Курс- группа	Шифр
91	Назаров Иван Петрович	ЮУрГУ	Э-091
92	Наурызбеков Еламан Амангелдулы	КазНТУ	Э-092
93	Неганов Алексей Александрович	КГСХА	Э-093
94	Нестеренко Глеб Борисович	НГТУ	Э-094
95	Никитина Светлана Дмитриевна	ИГЭУ	Э-095
96	Новиков Владимир Александрович	ИГЭУ	Э-096
97	Нормурадов Анатолий Султанович	КГТА	Э-097 Э-097
98	Паляницын Павел Сергеевич	Горный	Э-098
99	Парфенов Владимир Сергеевич	ЛЭТИ	Э-099
100	Парфенов Денис Сергеевич	КГСХА	Э-100
101	Пилипенко Андрей Владимирович	ЮРГПУ	Э-101
102	Плотников Иван Андреевич	КГТА	Э-102 Э-102
103	Разживин Андрей Анатольевич	КГТА	Э-103
104	Рассказов Егор Александрович	ЛЭТИ	Э-104
105	Робовой Евгений Петрович	ЮУрГУ	Э-105
106	Родионов Сергей Георгиевич	РГАТУ	Э-106
107	Рубцова Елена Юрьевна	ПГУ	Э-107
108	Рядов Павел Сергеевич	КГЭУ	Э-108
109			Э-109 Э-109
110			Э-110 Э-110

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№	Ф.И.О.	Курс- группа	Шифр
111	Саубанов Ришат Ильдусович	КГЭУ	Э-111
112	Сергеева Анна Михайловна	УРФУ	Э-112
113	Сидорова Алена Владимировна	НГТУ	Э-113
114	Скопинцев Илья Сергеевич	СамГТУ	Э-114
115	Смирнов Владимир Алексеевич	ИГЭУ	Э-115
116	Смирнов Иван Владимирович	ИГХТУ	Э-116
117	Смирнова Анна Георгиевна	ИГЭУ	Э-117
118	Соколов Игорь Владимирович	УРФУ	Э-118
119	Солдаткин Олег Никлолаевич	ИГЭУ	Э-119
120	Солдатов Дмитрий Алексеевич	ТПУ	Э-120
121	Тарасов Илья Алексеевич	ИРГТУ	Э-121
122	Тегай Алена Витальевна	КГТА	Э-122
123	Терехов Вячеслав Константинович	НГТУ	Э-123
124	Тимакова Наталья Викторовна	ЮУрГУ	Э-124
125	Тютин Роман Иванович	НГТУ	Э-125
126	Уманец Дмитрий Николаевич	БНТУ	Э-126
127	Фахрутдинов Рамис Азатович	КГЭУ	Э-127
128	Фахрутдинов Рафис Азатович	КГЭУ	Э-128
129	Филиппов Евгений Алексеевич	КГЭУ	Э-129
130	<i>Трушин Максим Андреевич</i>		Э-130
131			Э-131

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Participant list of International Student Competition on Theoretical and General
Electrical Engineering, April 23, 2014

№	Ф.И.О.	Курс- группа	Шифр
132	Харахнин Михаил Александрович	ИГЭУ	Э-132
133	Хомяков Константин Алексеевич	Горный	Э-133
134	Цалко Андрей Дмитриевич	ЮУрГУ	Э-134
135	Целикин Михаил Алексеевич	ПГУ	Э-135
136	Чистяков Иван Павлович	ПГУ	Э-136
137	Шабров Глеб Николаевич	РГАТУ	Э-137
138	Шарифуллин Ильдар Газинурович	КГЭУ	Э-138
139	Шевчук Сергей Андреевич	УРФУ	Э-139
140	Шекалов Алексей Валерьевич	НГТУ	Э-140
141	Шелковская Диана Александровна	НГТУ	Э-141
142	Шестоков Дмитрий Сергеевич	РГАТУ	Э-142
143	Шувалов Алексей Юрьевич	ТПУ	Э-143
144	Щербаков Михаил Евгеньевич	СамГТУ	Э-144
145	Эбуров Абылайхан Бакытбекулы	КазНТУ	Э-145
146	Югай Алексей Никитич	КГТА	Э-146
147	Юдин Егор Дмитриевич	ЮУрГУ	Э-147
148	Яковлев Филипп Олегович	КГТА	Э-148
149	<i>Янченко Максим Викторович</i>	<i>ВолГУ</i>	Э-149
150			Э-150

8. REPORT #2



Report #2

International Student Competition on Theoretical and General Electrical Engineering

Results of the Competition

Ivanovo

April 23, 2014

Jury: Makarov A.B., Golubev A.N., Sajkin M.S., Korolev A.N., Chekan G.V., Karachev V.D., Gramm M.I., Tarasova N.A. Zayakin I.I., Dobush V.S., Gromov V.V., Lanovenko E.V, Yakovlev V.F., Isaev S.G., Suslov I.V., Semenenko A.I., Zhantlesova A.B., Kodzhabergenova A.N., Shemanaeva L.I.

123 students participated in the Competition. The participants were offered 7 tasks to solve.


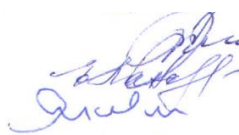


Results of individual championship are the following:

	Name and surname	Higher educational institution
<i>The 1st prize</i>	Gleb Nesterenko	Novosibirsk State Technical University
<i>The 2nd prize</i>	Roman Tjutin	Novosibirsk State Technical University
<i>The 3rd prize</i>	Il'ja Tarasov	National Research Irkutsk State Technical University

Jury head

 Makarov A.V.

Jury members:

	Golubev A.N.	
	Sajkin M.S.	
	Korolev A.N.	Gromov V.V.
	Chekan G.V.	Lanovenko E.V
	Karachev V.D.	Yakovlev V.F.
	Gramm M.I.	Isaev S.G.
	Tarasova N.A.	Suslov I.V.
	Zayakin I.I.	Semenenko A.I.
	Dobush V.S.	Zhantlesova A.B.
		Kodzhabergenova A.N.
		Shemanaeva L.I.



Report #2

International Student Competition on Theoretical and General Electrical Engineering

Results of the Competition

Ivanovo

April 23, 2014

Jury: Makarov A.B., Golubev A.N., Sajkin M.S., Korolev A.N., Chekan G.V., Karachev V.D., Gramm M.I., Tarasova N.A. Zayakin I.I., Dobush V.S., Gromov V.V., Lanovenko E.V, Yakovlev V.F., Isaev S.G., Suslov I.V., Semenenko A.I., Zhantlesova A.B., Kodzhabergenova A.N., Shemanaeva L.I.

17 teams participated in the Competition. The participants were offered 7 tasks to solve.

Results of team championship are the following:

Place	Higher educational institution
I	Novosibirsk State Technical University
II	Ural Federal University
	Ivanovo State Power Engineering University
III	Saint Petersburg Electrotechnical University "LETI"
	Kazan State Energetic University
	Belarusian National Technical University

Jury head

Makarov A.V.

Jury members:

Golubev A.N.
 Sajkin M.S.
 Korolev A.N.
 Chekan G.V.
 Karachev V.D.
 Gramm M.I.
 Tarasova N.A.
 Zayakin I.I.
 Dobush V.S.

Gromov V.V.
 Lanovenko E.V
 Yakovlev V.F.
 Isaev S.G.
 Suslov I.V.
 Semenenko A.I.
 Zhantlesova A.B.
 Kodzhabergenova A.N.
 Shemanaeva L.I.

Appendix for the report #2 from April 23, 2014

Summing-up the results of the International Student Competition on theoretical and general electrical engineering

Cipher	Student's surname, name, the 2 nd name	Higher educational institution	1	2	3	4	5	6	7	Sum
Э-060	Кононов Сергей Андреевич	ИГЭУ	14	8	0	10	15	10	10	67
Э-094	Нестеренко Глеб Борисович	НГТУ	15	5	5	10	14	10	0	59
Э-125	Тютин Роман Иванович	НГТУ	15	5	10	7	15	2	0	54
Э-121	Тарасов Илья Алексеевич	ИРГТУ	5	5	0	10	15	10	7	52
Э-123	Терехов Вячеслав Константинович	НГТУ	15	8	0	10	10	7	0	50
Э-140	Шекалов Алексей Валерьевич	НГТУ	15	5	5	7	5	10	0	47
Э-149	Янченко Максим Викторович	ВоГУ	15	15	0	8	5	2	0	45
Э-136	Чистяков Иван Павлович	ПГУ	0	12	0	8	15	10	0	45
Э-111	Саубанов Ришат Ильдусович	КГЭУ	5	12	0	10	15	1	1	44
Э-128	Фахрутдинов Рафис Азатович	КГЭУ	0	5	10	10	14	5	0	44
Э-085	Мурашкин Михаил Кириллович	УРФУ	15	5	0	7	12	3	2	44
Э-008	Балах Эдуард Геннадьевич	УРФУ	7	2	5	8	15	6	0	43
Э-104	Рассказов Егор Александрович	ЛЭТИ	10	10	0	3	8	10	0	41
Э-016	Бутылин Игорь Андреевич	ЛЭТИ	6	8		9	7	10		40
Э-118	Соколов Игорь Владимирович	УРФУ	2	5	0	10	12	10	0	39
Э-132	Харахнин Михаил Александрович	ИГЭУ	15	15	0	3	0	4	0	37
Э-021	Велигура Сергей Александрович	ЮРГПУ	13	8	0	4	11	0	0	36
Э-071	Карабут Екатерина Викторовна	НГТУ	15	2	5	8	3	2	0	35
Э-027	Гончаров Антон Сергеевич	ИГЭУ	10	5	0	6	9	4	0	34
Э-095	Никитина Светлана Дмитриевна	ИГЭУ	5	12	0	7	3	7	0	34
Э-113	Сидорова Алена Владимировна	НГТУ	5	5	10	10	0	4	0	34
Э-028	Гончаров Егор Николаевич	БНТУ	0	8	5	10	6	4	0	33
Э-084	Михолап Егор Николаевич	БНТУ	0	10	5	10	7	1	0	33
Э-029	Григорьев Артем Сергеевич	ТПУ	2	7	5	10	5	4	0	33

Э-086	Мурашко Андрей Владимирович	БНТУ	0	5	0	10	15	1	0	31
Э-055	Казарин Артем станиславович	ИГЭУ	3	5	5	3	2	10	3	31
Э-030	Григорян Анаит Сергеевна	ЛЭТИ	5	5	0	4	7	10	0	31
Э-043	Жабасов Тамирлан Касимбекулы	ТПУ	5	3	0	9	3	10	0	30
Э-038	Елкин Александр Владимирович	СамГТУ	14	2	0	7	5	1		29
Э-083	Михненко Владислав Геннадьевич	БНТУ	0	15		10	2	1		28
Э-009	Басова Анастасия Евгеньевна	ИГЭУ	10	3	0	2	3	10	0	28
Э-091	Назаров Иван Петрович	ЮУрГУ	15	10	0	0	1	0	0	26
Э-011	Белбородов Кирилл Юрьевич	ТПУ	15	5	0	5	0	0	0	25
Э-101	Пилипенко Андрей Владимирович	ЮРГПУ	0	15	0	0	0	10	0	25
Э-115	Смирнов Владимир Алексеевич	ИГЭУ	2	5	0	7	0	10	0	24
Э-089	Максимов Игорь Олегович	ЮУрГУ	14	8	0	1	0	1	0	24
Э-126	Уманец Дмитрий Николаевич	БНТУ	0	2	0	10	10	1	0	23
Э-047	Зуевский Игорь Геннадьевич	ЮРГПУ	0	3	0	10	10	0	0	23
Э-046	Зотова Мария Владимировна	ИГЭУ	3	15	0	3	0	1	0	22
Э-081	Меркулов Александр Юрьевич	ИГЭУ	0	15	0	3	0	2	2	22
Э-096	Новиков Владимир Александрович	ИГЭУ	0	8	0	7	0	7	0	22
Э-050	Идрисов Ринат Рафисович	УРФУ	3	8	0	2	0	9	0	22
Э-002	Абрамова Мария Юрьевна	ИГЭУ	3	15	0	0	0	3	0	21
Э-138	Шарифуллин Ильдар Газинурович	КГЭУ	0	10	0	1	7	3	0	21
Э-024	Витязев Артем Сергеевич	БНТУ	0	3	0	10	3	2	2	20
Э-062	Копалов Александр Иванович	ИГЭУ	2	3	0	4	0	10	0	19
Э-117	Смирнова Анна Георгиевна	ИГЭУ	0	5	0	10	0	3	1	19
Э-099	Парфенов Владимир Сергеевич	ЛЭТИ	5	2	0	3	2	7	0	19
Э-017	Анчуков Алексей Евгеньевич	ЮУрГУ	3	8	0	7	0	1	0	19
Э-049	Иванова Наталья Сергеевна	ИГЭУ	0	15	0	2	0	1	0	18
Э-019	Васильков Олег Сергеевич	Горный	3	3	0	2	0	9	0	17

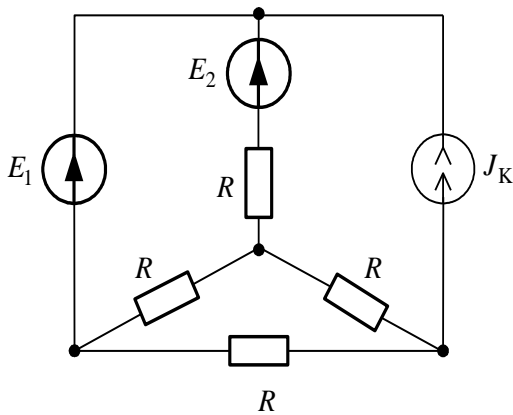
Э-119	Солдаткин Олег Николаевич	ИГЭУ	0	0	0	4	0	10	3	17
Э-020	Введенский Никита Евгеньевич	ИГЭУ	3	0	0	4	5	4	0	16
Э-023	Виноградова Дарья Сергеевна	ИГЭУ	0	6	0	4	3	3	0	16
Э-072	Кузнецов Кирилл Эдуардович	УрФУ	5	8	0	2	0	1	0	16
Э-026	Воронцов Денис Валерьевич	ИРГТУ	5	5	0	4	0	1	0	15
Э-108	Рядов Павел Сергеевич	КГЭУ	0	5	0	7	3	0	0	15
Э-044	Журавков Антон Дмитриевич	КазНТУ	8	4	0	2	0	0	0	14
Э-078	Максименко Александр Сергеевич	ЮУрГУ	10	4	0	0	0	0	0	14
Э-015	Булка Дмитрий Алексеевич	БНТУ	0	2	0	10	0	1	0	13
Э-045	Журавлев Егор Дмитриевич	БНТУ	0	5	0	3	3	1	0	12
Э-056	Карманова Юлия Александровна	ИГЭУ	6	2	0	3	0	1		12
Э-034	Дэулетяр Райхан Талгаткызы	КазНТУ	5	5	0	1		1	0	12
Э-075	Лукьянов Владимир Иванович	ЮРГПУ	0	4	0	4	2	2	0	12
Э-035	Воробьева Мария Владимировна	ВоГУ	0	5		5	0	1	0	11
Э-134	Цалко Андрей Дмитриевич	ЮУрГУ	3	3	0	3	0	2	0	11
Э-032	Добровольский Николай Александрович	ЛЭТИ	0	8	0	0	0	2	0	10
Э-025	Воронин Сергей Валерьевич	ТПУ	2	2	0	2	0	3	0	9
Э-067	Куликов Антон Алексеевич	УрФУ	0	5	0	1	0	3	0	9
Э-013	Биченов Дмитрий Александрович	ПГУ	2	0		6				8
Э-144	Щербаков Михаил Евгеньевич	СамГТУ	0	5	0	0	0	0	3	8
Э-105	Ровой Евгений Петрович	ЮУрГУ	2	5	0	0	0	1	0	8
Э-042	Ершов Никита Владимирович	Горный	2	0	0	3	0	2	0	7
Э-014	Боровской Вячеслав Евгеньевич	ИРГТУ	5		0	0		2	0	7
Э-04	Абуллаев Бауыржан Муратович	КазНТУ	2	5	0	0	0	0	0	7
Э-080	Матвеев Иван Сергеевич	ЛЭТИ	5	0	0	1	0	1	0	7
Э-039	Елькин Дмитрий Александрович	СамГТУ	0	5	0	2	0	0		7
Э-090	Майстренко Никита Сергеевич	СамГТУ	0	5	0	1	0	1	0	7

Э-022	Винников Владислав Александрович	ИРГТУ	3	2	0	0	0	1	0	6
Э-079	Марач Ярослав Михайлович	ИРГТУ	6	0	0	0	0	0	0	6
Э-124	Тимакова Наталья Викторовна	ЮУрГУ	0	5	0	0		1	0	6
Э-093	Неганов Алексей Александрович	КГСХА	0	4	0	1	0	0	0	5
Э-122	Тегай Алена Витальевна	КГТА	0	4	0	0	0	1	0	5
Э-087	Мухаматяров Румиль Ринатович	КГЭУ	0	0	0	1	4	0	0	5
Э-127	Фахрутдинов Рамис Азатович	КГЭУ	0	0	0	1	4	0	0	5
Э-106	Родионов Сергей Георгиевич	РГАТУ	0	5						5
Э-143	Шувалов Алексей Юрьевич	ТПУ	0	0	0	1	0	4	0	5
Э-005	Анненков Евгений Александрович	ЮРГПУ	0	4		1	0			5
Э-092	Наурызбеков Еламан Амангелдулы	КазНТУ	0	3	0	0	0	1	0	4
Э-077	Макеев Александр Павлович	Горный	0	0	0	2	0	1	0	3
Э-116	Смирнов Иван Владимирович	ИГХТУ	0	2	0	1	0	0	0	3
Э-007	Бакытжан Эсел Бакытжанкызы	КазНТУ	0	2	0	0	0	1	0	3
Э-058	Кокурин Александр Александрович	КГСХА	0	2	0	0	1	0	0	3
Э-100	Парфенов Денис Сергеевич	КГСХА	0	2	0	1	0	0	0	3
Э-048	Зюзин Александр Владимирович	РГАТУ	0	3	0	0	0	0	0	3
Э-129	Филиппов Евгений Алексеевич	КГЭУ	0	0	0	1	0	1	0	2
Э-051	Коноплев Илья Андреевич	ИГЭУ	0	2	0	0	0	0	0	2
Э-107	Рубцова Елена Юрьевна	ПГУ	0	0	0	0	0	2	0	2
Э-135	Целикин Михаил Алексеевич	ПГУ	0	0	0	1	1	0	0	2
Э-033	Духова Марина Александровна	РГАТУ	2	0	0	0	0	0	0	2
Э-040	Ени Сергей Михайлович	КГСХА	0	0	0	0	0	1	0	1
Э-068	Кунц Алина Владимировна	КГСХА	0	0	0	1	0	0	0	1
Э-031	Добровольский Илья Сергеевич	РГАТУ	1	0	0	0	0	0	0	1
Э-114	Скопинцев Илья Сергеевич	СамГТУ	0	0	0	0	0	1	0	1
Э-041	Еремейчук Анна Николаевна	ЮРГПУ	0	0	0	0	0	1	0	1

Э-130	Трошин Максим Андреевич		0	1	0	0	0	0	0	0	1
Э-098	Паляницын Павел Сергеевич	Горный	0								0
Э-133	Хомяков Константин Алексеевич	Горный	0	0	0	0	0	0	0	0	0
Э-006	Аристархов Кирилл Михайлович	ИГХТУ		0			0				0
Э-018	Абулов Абылайхан Бактыулы	КазНТУ	0	0	0	0	0	0	0	0	0
Э-088	Мухтарбеков Сэкен Толегенулы	КазНТУ	0	0	0	0	0	0	0	0	0
Э-001	Абаджи Александр Михайлович	КГСХА	0				0				0
Э-065	Кузнецов Сергей Андреевич	КГСХА	0	0	0	0	0	0	0	0	0
Э-036	Воробьев Денис Викторович	КГТА	0	0			0				0
Э-037	Елина Екатерина Дмитриевна	КГТА	0	0	0	0	0	0	0	0	0
Э-103	Разживин Андрей Анатольевич	КГТА	0	0	0	0	0	0	0	0	0
Э-146	Югай Алексей Никитич	КГТА	0	0	0	0	0	0	0	0	0
Э-148	Яковлев Филипп Олегович	КГТА	0	0	0	0	0	0	0	0	0
Э-073	Лебеденко Михаил Сергеевич	ЛЭТИ	0		0	0	0	0			0
Э-137	Шабров Глеб Николаевич	РГАТУ	0	0	0	0	0	0	0	0	0
Э-142	Шестоков Дмитрий Сергеевич	РГАТУ	0	0							0
Э-057	Карташова Татьяна Павловна	ЮРГПУ	0	0	0	0	0	0	0	0	0

9. QUALIFICATION TASKS WITH THE SOLUTIONS

Task 1

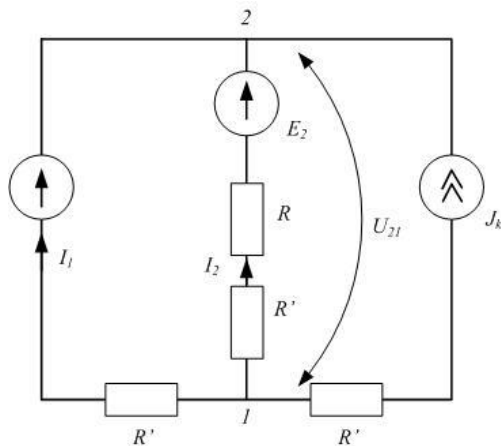


In DC linear circuit $J_K = 1 [A]$, $R = 30 [Ohm]$, $E_2 = 0,5 \cdot E_1$, the total power of voltage sources is $\sum P_E = 9,5 [Watt]$. The task is to determine the magnitude E_1 .

Solution:

$$R + R' = 30 + 10 = 40 [Ohm] = 4 \cdot R'$$

$$R \rightarrow R'; R' = \frac{R}{3} = \frac{30}{3} = 10 [Ohm].$$



$$U_{21} = \frac{E_1 \cdot \frac{1}{R'} + E_2 \cdot \frac{1}{4 \cdot R'} + J_K}{\frac{1}{R'} + \frac{1}{4 \cdot R'}} = \frac{1}{4 \cdot R'} (4 \cdot E_1 + 0,5 \cdot E_1 + 4 \cdot J_K \cdot R') = \frac{5}{4} R' = 0,9 \cdot E_1 + 8$$

Ohm's law:

$$\left. \begin{aligned} I_1 &= (E_1 - U_{21}) \cdot \frac{1}{R'} = (E_1 - 0,9 \cdot E_1 - 8) \cdot \frac{1}{10} = 0,01 \cdot E_1 - 0,8 \\ I_2 &= (E_2 - U_{21}) \cdot \frac{1}{4 \cdot R'} = (0,5 \cdot E_1 - 0,9 \cdot E_1 - 8) \cdot \frac{1}{40} = -0,01 \cdot E_1 - 0,2 \end{aligned} \right\} \rightarrow I_1 + I_2 = -I_K$$

$$0,01 \cdot E_1 - 0,08 - 0,01 \cdot E_1 - 0,2 = -1 = -J_K$$

$$P_{E1} = E_1 \cdot I_1 = E_1 \cdot (0,01 \cdot E_1 - 0,8); P_{E2} = 0,5 \cdot E_1 \cdot I_2 = 0,5 \cdot E_1 \cdot (-0,01 \cdot E_1 - 0,2)$$

$$\sum P_E = E_1 \cdot (0,01 \cdot E_1 - 0,8 - 0,005 \cdot E_1 - 0,1) = 0,005 \cdot E_1 \cdot (E_1 - 180) = 0,005 \cdot (E_1^2 - 180) = 9,5 [Watt]$$

$$E_1^2 - 180 \cdot E_1 - \frac{95}{0,005} = 0$$

$$E_1^2 - 180 \cdot E_1 - 1900 = 0$$

$$X \rightarrow E_1$$

$$X_{1,2} = 90 \pm \sqrt{8100 + 1900} = 90 \pm 100 \rightarrow E_1 = 90 \pm 100 [V]$$

$$E_1 = 190 [V], E_2 = 95 [V]$$

$$I_1 = 0.01 \cdot 190 - 0.8 = 1.1 [A]; I_2 = -0.01 \cdot 190 - 0.2 = 2.1 [A]$$

$$\sum P_E = 190 \cdot 1.1 - 95 \cdot 2.1 = 9.5 [Watt]$$

$$E_1 = -10 [V], E_2 = -5 [V]$$

$$I_1 = 0.01 \cdot (-10) - 0.8 = -0.9 [A]; I_2 = 0.01 \cdot 10 - 0.9 = -0.1 [A]$$

$$\sum P_E = (-10) \cdot (-0.9) + (-5) \cdot (-0.1) = 9.5 [Watt]$$

The answer:

$$E_1 = 190 [V], E_2 = 95 [V]$$

$$E_1 = -10 [V], E_2 = -5 [V]$$

Task 2

Coil resistance under the frequency of ω_0 is twice less than its inductive reactance. How the current frequency must be varied for the power factor increases twice?

Assumption: cable resistance is independent from frequency.

Solution:

Under the conditions of problem: $2 \cdot r = \omega_0 \cdot L$

$$\text{At the same time } \cos \varphi = \frac{r}{\sqrt{r^2 + \omega_0 \cdot L^2}} = \frac{r}{\sqrt{r^2 + 4 \cdot r^2}} = \frac{1}{\sqrt{5}}$$

To increase the power factor twice, let's vary current frequency in k -times. As a result for k determining we have the correlation:

$$\frac{r}{\sqrt{r^2 + 4 \cdot r^2}} = \frac{2}{\sqrt{5}} = \frac{r}{\sqrt{r^2 + k^2 \omega_0 L^2}} = \frac{1}{\sqrt{1 + 4 \cdot k^2}}$$

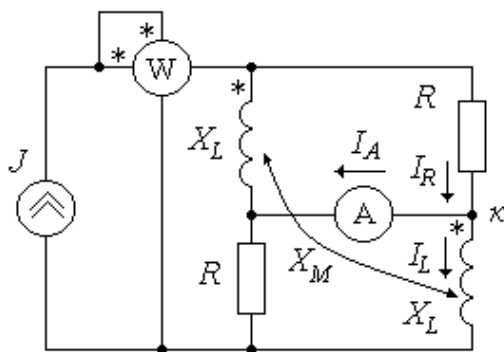
$$\left(\frac{2}{\sqrt{5}}\right)^2 = \left(\frac{1}{\sqrt{1 + 4 \cdot k^2}}\right)^2$$

$$4 + 16 \cdot k^2 = \frac{1}{16} k = 0.25$$

The answer:

frequency must be decreased 4 times.

Task 3



In sinusoidal current linear circuit with current source J and resistances $R = X_M = X_L = 50$ [Ohm] the wattmeter shows the power of $P_W = 80$ [Watt]. The task is to determine the ammeter reading of the electromagnetic system and the current magnitude of current source J .

Solution:

1. When compiling the loading diagram the wattmeter and the ammeter are taken away as structural components. The wattmeter reading P_W is determined as the power, which is spread at pure resistances R , and the ammeter reading being the current through the bridge simulating a measuring instrument. The elements X_L and R on the diagram trade places (fig. 4). Then let's do the inductive isolation (fig. 5). As the elements $2X_L$ and R (fig. 5) form a balanced bridge ($2jX_L \cdot R = 2jX_L \cdot R$), then the voltage $U_{ab} = 0$ and the current $I_{ab} = 0$. According to the compensating substitution method the element $-X_L$ with the current $I_{ab} = 0$ are substituted with the current source with the current $J_{ab} = 0$, an after that, according to the equivalent substitution method it is substituted with the breakage between the points a and b (fig. 6).

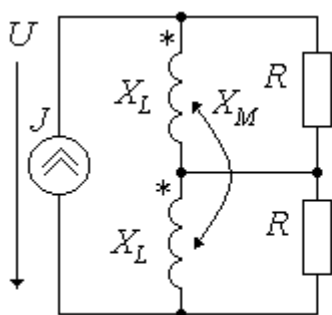


Рис. 4

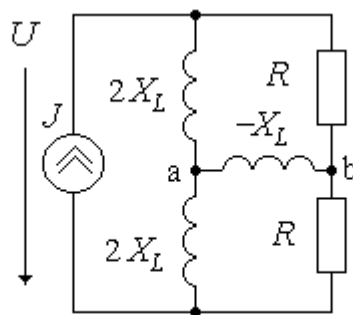


Рис. 5

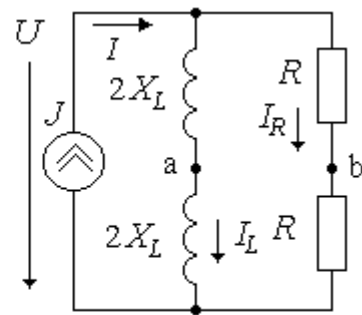


Рис. 6

2. In the diagram of fig. 6 using the known active power we determine the voltage U and the current I_R , and after that we find I_L and I :

$$U = \sqrt{2R \cdot P_W} = \sqrt{2 \cdot 50 \cdot 80} = 40\sqrt{5} \text{ [V]};$$

$$I_R = \sqrt{P_W / (2R)} = \sqrt{80 / (2 \cdot 50)} = 2\sqrt{0.2} \text{ [A]};$$

$$I_L = U / (4X_L) = 40\sqrt{5} / (4 \cdot 50) = 0.2\sqrt{5} \text{ [A]}.$$

Because of $\dot{U} = U$ current complex is $\dot{I} = I_R - jI_L$, then

$$I = \sqrt{I_L^2 + I_R^2} = \sqrt{(0.2\sqrt{5})^2 + (2\sqrt{0.2})^2} = \sqrt{0.2 + 0.8} = 1 \text{ [A]}.$$

Thus,

$$J = I = 1 \text{ [A]}.$$

3. The ammeter reading is determined according to *Kirchhoff's first law* for the component “κ” of the diagram fig. 3:

$$\dot{I}_A = \dot{I}_R - \dot{I}_L = I_R + jI_L.$$

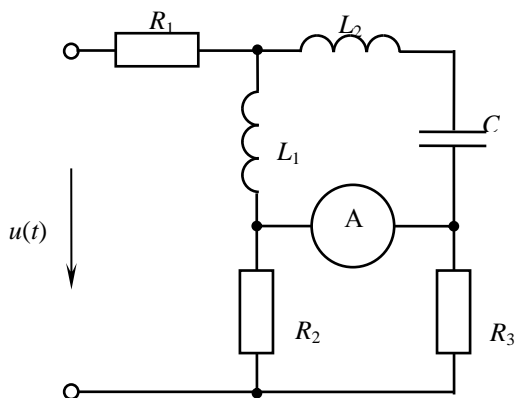
Current module

$$I_A = \sqrt{I_R^2 + I_L^2} = 1 \text{ [A]}.$$

The answer:

the current of the current source J is 1 [A]; the ammeter reading I_A is 1 [A].

Task 4



There is a source of non-sinusoidal voltage in the circuit:

$$u(t) = 120 + 180 \cdot \sqrt{2} \cdot \sin(100 \cdot t - 65^\circ) - 160 \cdot \sqrt{2} \cdot \sin(200 \cdot t + 25^\circ) \text{ [V]}$$

The characteristics of passive elements in the circuit are following: $R_1 = 10 \text{ [Ohm]}$; $R_2 = R_3 = 20 \text{ [Ohm]}$;

$$L_1 = 0.45 \text{ [Henry]}; L_2 = 0.15 \text{ [Henry]}; C = 166.7 \text{ [\mu F]}.$$

The task is to determine the ammeter reading of the electromagnetic system.

Solution:

The standard solution with the method of superposition

$$1) u = 120 \text{ [V]} = \text{const} \quad I_{A(B)} = \frac{120}{(R_1 + 0.5 R_2) \cdot 2} = 3 \text{ [A]};$$

2) $u(t) = 180 \sqrt{2} \sin 100t \text{ [V]}$. The starting phase may be not taken into account.

$$X_{L1(1)} = 45 \text{ [Ohm]}, X_{L2(1)} = 15 \text{ [Ohm]}, X_{C(1)} = 60 \text{ [Ohm]}.$$

The overhead parallel circuit is a breakage for the outside current, but there is current in the circuit itself:

$$I_{A(I)} = 180 / X_{L1(I)} = 4 \text{ [A]}.$$

3) $u(t) = 160 \sqrt{2} \sin 200 t \text{ [V]}$; $X_{L1(2)} = 90 \text{ [Ohm]}$, $X_{L2(2)} = 30 \text{ [Ohm]}$,

$$X_{C(2)} = 30 \text{ [Ohm]}.$$

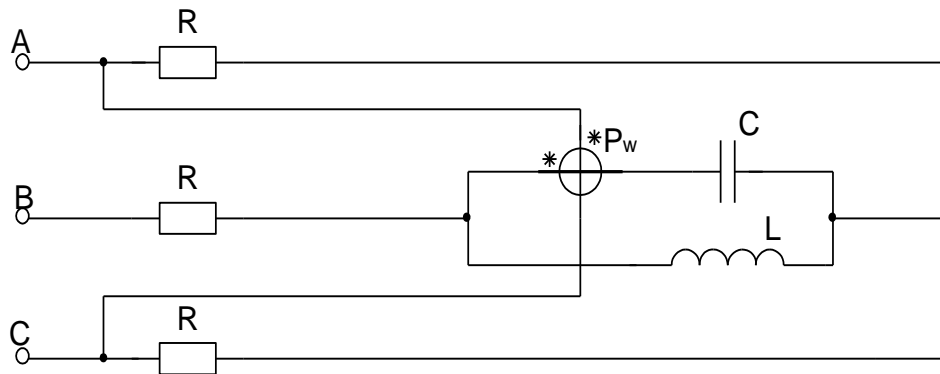
$$L_2 \text{ and } C \text{ form the bridge: } I_{A(2)} = \frac{160}{(R_1 + 0.5 R_2) \cdot 2} = 4 \text{ [A]}.$$

$$4) I_A = \sqrt{I_{A(0)}^2 + I_{A(I)}^2 + I_{A(2)}^2} = 6.4 \text{ [A]}.$$

The answer:

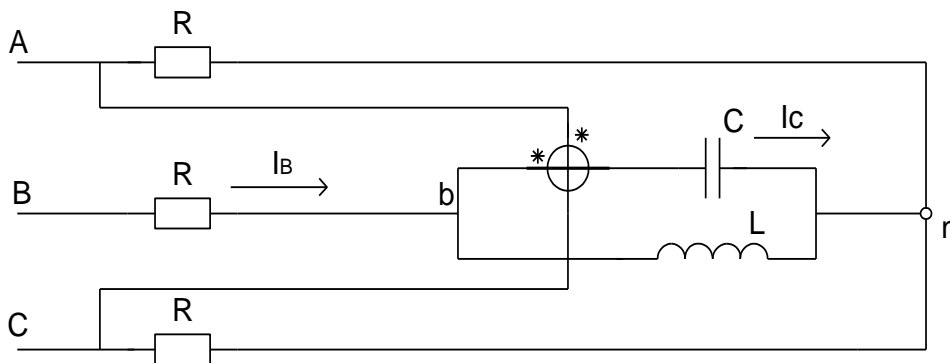
$$I_A = 6.4 \text{ [A]}$$

Task 5



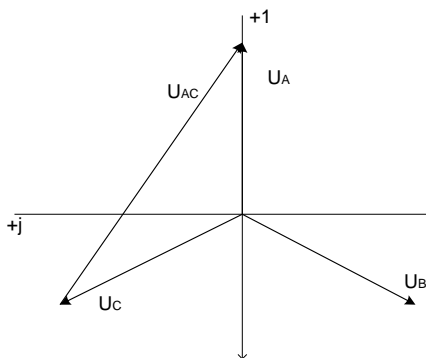
The linear voltage in the three-phase circuit is $U_{\text{Л}} = 380 \text{ [V]}$. The resistance of resistors, a coil and a capacitor is $R = X_L = X_C = 100 \text{ [Ohm]}$ Determine the wattmeter readings.

Solution:



$$1) P_W = \text{Re}\{U_{AC} * I_C\}$$

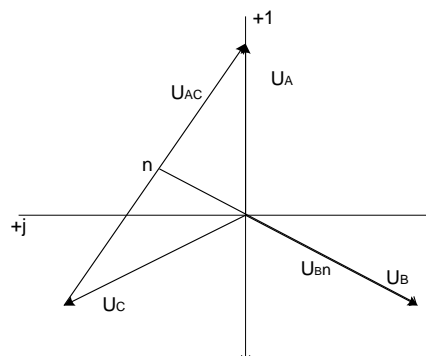
$$U_{AC} = U_{\text{Л}} e^{-j30^\circ}$$



2) As $X_L = X_C$, then $I_B = 0$. Thus, $\varphi_b = \varphi_B$

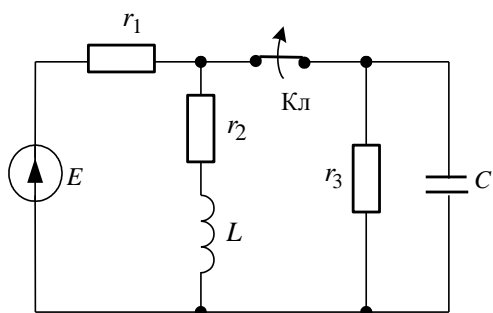
$$U_{bn} = \frac{3}{2} U_B = \frac{3}{2} \frac{U_{\text{Л}}}{\sqrt{3}} e^{-j120^\circ} = \frac{\sqrt{3}}{2} U_{\text{Л}} e^{-j120^\circ}$$

$$3) I_C = \frac{U_{bn}}{-jX_C} = \frac{\frac{\sqrt{3}}{2} U_{\text{Л}} e^{-j120^\circ}}{X_C e^{-j90^\circ}} = \frac{\sqrt{3}}{2} \frac{U_{\text{Л}}}{X_C} e^{-j30^\circ}$$



$$4) P_W = \text{Re}\left\{U_{\text{Л}} e^{-j30^\circ} \frac{\sqrt{3}}{2} \frac{U_{\text{Л}}}{X_C} e^{j30^\circ}\right\} = \frac{\sqrt{3}}{2} \frac{U_{\text{Л}}^2}{X_C}$$

Task 6



After the disjunction the current through the inductance in the transient is $i_L(t) = 2 - 0.5e^{-300t}$ [A]; $r_1 = 10$ [Ohm]; $L = 0,1$ [Henry]; $C = 50$ [μF]; $E = const$. The task is to determine the voltage on the capacity $u_C(t)$ during the transient.

Solution:

$$p_1 = -300 = -\frac{r_{\text{экв}}}{L} = -\frac{R_1 + R_2}{L} = -\frac{10 + R_2}{0.1} \Rightarrow R_2 = 20 \text{ [Ohm]}$$

$$i_{Lnp} = \frac{E}{R_1 + R_2} = \frac{2(R_1 + R_2)}{R_1 + R_2} = 2$$

$$i_L(+0) = 2 - 0.5 = 1.5 \text{ [A]}$$

$$i_L(+0) = i_L(-0) = \frac{E}{R_1 + \frac{R_2 \cdot R_3}{R_2 + R_3}} \cdot \frac{R_3}{R_2 + R_3} = 1.5 \Rightarrow R_3 = 20 \text{ [Ohm]}$$

$$U_C(t) = U_{Lnp} + U_{C\text{св}} = 0 + Ae^{p_2 t}$$

$$p_{1,2} = -\frac{1}{R_{\text{экв}} \cdot C} = -\frac{1}{R_3 \cdot C} = -\frac{10^6}{20 \cdot 50} = -1000 \text{ [1/s]}$$

The answer:

$$U_C(t) = 30e^{-1000t} \text{ [V]}$$

Task 7

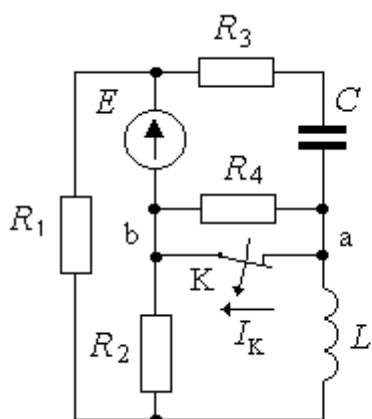


Fig.1

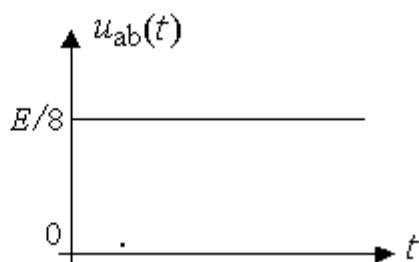


Fig.2

There is a commutation of the switch “K” in DC circuit (fig.1) with the characteristics $L = 0,9$ [Henry], $C = 10^{-3}$ [F], $R_1 = R_2 = R$ under $t = 0$. Voltage transient $u_{ab}(t)$ is shown on fig.2. Determine the resistance parameters R_1, R_2, R_3 and R_4 .

Solution:

1. The commutation starting conditions are not zero ones, that is why, in order to include $u_{ab}(t)$ into the calculation we shall use the method of reduction to the starting conditions, thus, let's determine the voltage $u_{ab}(t)$ as the sum

$$u_{ab}(t) = u_{ab}^{(o)}(t) + u_{ab}^{(k)}(t), \text{ where}$$

$u_{ab}^{(o)}(t) = 0$ – is the voltage when the commutation of the switch is absent;

$u_{ab}^{(k)}(t)$ – is the voltage when the commutation of the switch is present.

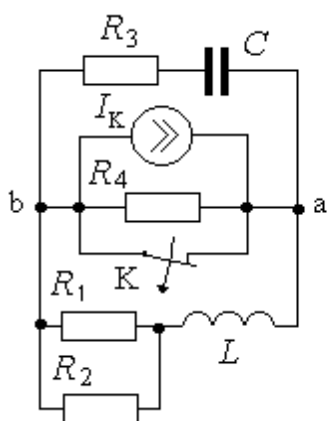


Fig.3

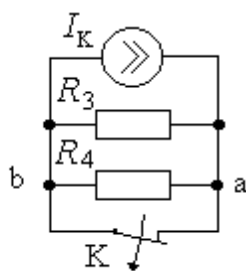


Fig.4

The voltage $u_{ab}^{(k)}(t)$ calculation is done in the diagram, given on fig. 3. The diagram is formed from the one (fig.1) by voltage zeroing ($E = 0$) and switching in parallel the switch K and the current source $I_K = E/R_1$, which is directed as the opposed one to the current I_k in the diagram fig. 1.

2. The transient will look like as one shown on fig. 2, if there is an indifferent resonance in the diagram, that is

$$R_3 = \frac{R_1 R_2}{R_1 + R_2} = R/2 = \sqrt{L/C} = 30 \text{ [Ohm]}.$$

Consequently, $R_1 = R_2 = R = 60 \text{ [Ohm]}$.

3. The diagram under the indifferent resonance is shown on fig. 4. The voltage as the result of commutation is

$$u_{ab}(t) = u_{ab}^{(k)}(t) = I_K \frac{R_3 R_4}{R_3 + R_4} = \frac{E}{8}.$$

Having done the substitution $I_K = E/R_1$, we get

$$\frac{E}{R_1} \cdot \frac{R_3 R_4}{R_3 + R_4} = \frac{E}{8}.$$

Subject to numerical values of R_1 and R_3 there will be

$$\frac{E}{60} \cdot \frac{30 R_4}{30 + R_4} = \frac{E}{8}.$$

Hence,

$$4R_4 = R_4 + 30; \quad R_4 = 10 \text{ [Ohm]}.$$

The answer:

the resistances are $R_1 = R_2 = 60 \text{ [Ohm]}$; $R_3 = 30 \text{ [Ohm]}$; $R_4 = 10 \text{ [Ohm]}$.



11. THE ANNOUNCEMENT ABOUT THE RESULTS OF THE COMPETITION

International Student Competition on Theoretical and General Electrical Engineering

among the students of electrotechnical and electrical power specialities.

Ivanovo State Power Engineering University (ISPEU) and Russian National Committee of International Council on Large Electric Systems (CIGRE RNC) under the support of OJSC «The System Operator of the United Power System», JSC "Territorial Generating Company #2" and Charity fund «Reliable Young Generation» have successfully held **the International Student Competition on Theoretical and General Electrical Engineering** among the students of electrotechnical and electrical power specialities April 22-24, 2014.

The aim of this Competition was to improve the quality of specialists' preparation on electrotechnical and electrical power specialities, increase students' interest for the profession they have chosen, find out talented young people and form personnel potential to organize research, design, production and administrative activity.

The competitions on Theoretical and General Electrical Engineering have a long history. The first competitions were held in ISPEU in the 1960-s. In September, 1981 there was held an All-Russian round of the All-Union Competition on Theoretical Basics of Electrical Engineering in ISPEU.

Since 2006 the Competition has been held as the 2nd round of the All-Russian Competition. This year the Competition has become international one thanks to the participation of the students from Kazakhstan and Belarus. The participants from the Ukraine couldn't take part because of the objective reasons. The number of the participants exceeded 130 people.

The students of the following higher educational institutions took part in the Competition:

1. **Kazakh National Technical University (Almaty, Kazakh Republic)**
2. **Belarusian National Technical University (Minsk, Republic of Belarus)**
3. **Vologda State University (Vologda, Russia)**
4. **South-Russian State Polytechnic University (Novocherkassk, Russia)**
5. **Kovrov State Technological Academy (Kovrov, Russia)**
6. **Ivanovo State Power Engineering University (Ivanovo, Russia)**
7. **Kazan State Energetic University (Kazan, Tatarstan Republic)**
8. **Saint Petersburg Electrotechnical University "LETI" (Saint-Petersburg, Russia)**
9. **Novosibirsk State Technical University (Novosibirsk, Russia)**

- 10. National Mineral Resources University «University of Mines» (Saint-Petersburg, Russia)**
- 11. Samara State Technical University (Samara, Russia)**
- 12. National Research Tomsk Polytechnic University (Tomsk, Russia)**
- 13. Rybinsk State Aviation Technical University (Rybinsk, Russia)**
- 14. Ivanovo State University of Chemistry and Technology (Ivanovo, Russia)**
- 15. Kostroma State Agricultural Academy (Kostroma, Russia)**
- 16. National Research Irkutsk State Technical University (Irkutsk, Russia)**
- 17. Penza State University (Penza, Russia)**
- 18. Ural Federal University (Yekaterinburg, Russia)**
- 19. National Research South-Ural State University (Chelyabinsk, Russia)**

The students had 4 hours to solve the competition tasks. The participants were offered 7 tasks on 4 following subjects:

1. DC circuits
2. AC circuits including nonsinusoidal current
3. Three-phase circuits
4. Transients in linear electric circuits of the first and the second order

In addition to the teachers from ISPEU TBEE department the jury also consists of the team representatives or teachers from other higher educational institutions, which take part in the Competition. The jury assessed each work very attentively and fairly; the results were unknown till the moment of deciphering the works and the summing-up.

There was organized a big cultural program for the participants of the Competition. On Tuesday, April 22, the teams could take a closer look at Ivanovo during the coach tour. The students saw its historical streets and different architectural monuments.

There were several admirable trips for the participants after the Competition on April 23. At first the students went to Plyos which situated on the Volga River. The tour guide showed the main sights of the town, the students took a lot of pictures and bought some souvenirs. After that the students went to Kostroma State District Power Plant in Volgorechensk. They saw a switch-gear, autotransformers, a turbine room with turbines, generators and boilers. The station unit of 1200 MV impressed the students most of all. In the evening the students had gala dinner. They could become more acquainted with each other.

The ceremony of the winners' awarding was held on April 24 in room B-301. The ceremony was opened by Sergey Tararykin, the rector of ISPEU, and Vladimir Tutikov, the vice-rector of ISPEU. The winners were awarded according to the results of the team championship and the individual one.

The list of the winners in the team championship:

№	The name of the higher educational institution	Sum of points	Team place
1	Novosibirsk State Technical University	210	1
2	Ural Federal University	148	2
3	Ivanovo State Power Engineering University	136	2
4	Saint Petersburg Electrotechnical University “LETI”	131	3
5	Kazan State Energetic University	124	3
6	Belarusian National Technical University	117	3
7	National Research Tomsk Polytechnical University	97	4
8	South-Russian State Polytechnic University	96	4
9	National Research South-Ural State University	83	5
10	National Research Irkutsk State Technical University	80	5
11	Penza State University	57	6
12	Samara State Technical University	51	6
13	Kazakh National Technical University	37	7
14	National Mineral Resources University «University of Mines»	27	8
15	Kostroma State Agricultural Academy	12	9
16	Rybinsk State Aviation Technical University	11	9
17	Kovrov State Technological Academy	5	10

The results of the individual championship:

№	Name and surname	Points	Higher educational institution
<i>The 1st prize</i>	Gleb Nesterenko	59	Novosibirsk State Technical University
<i>The 2nd prize</i>	Roman Tjutin	54	Novosibirsk State Technical University
<i>The 3rd prize</i>	Il'ja Tarasov	52	National Research Irkutsk State Technical University

The 4th year ISPEU student, Sergei Kononov, took part out of competition because of “*The Regulations on International Student Competition on Theoretical and General Electrical Engineering*” and come the head of overall ranking. That’s why the jury made the decision to award him with the diploma “For the 1st Prize on overall ranking” and V.Y. Ilushko, the deputy chief engineer of JSC "Territorial Generating Company #2" presented him the certificate for 10000 rubles.

The winners in the team test were awarded with the diplomas and books about the history of electrical engineering.

The winners in the individual championship were awarded with the diplomas. CIGRE RNC gave their own presents to the winners: money prizes at the rate of 5000, 3000 and 1000 rubles respectively, T-shirts with symbols of CIGRE RNC and books on power industry.

After the rewarding there was organized the round-table discussion *Electrotechnical Education: Problems and Prospects*. The participants shared their opinions about the Competition and said many thanks concerning the organizers of the Competition. There was an offer to make the competition annual.

The participants discussed the main problems of teaching and preparing specialists of electrical power and electrotechnical spheres.

In the context of the round-table Serov V.A., the leading expert of JSC «System Operator of the United Power System» (JSC «SO UPS»), told the participants of the Competition about the personnel policy of JSC «SO UPS» and the outlooks for job placement in the company.

The team leaders noted a high level of the Competition organization, the opportunity to communicate with each other, discussed the plans for the future partnership and offered to make the Competition annual.

12. PICTURE REPORT OF THE COMPETITION

The Competition Opening Ceremony



The welcoming speech of Vladimir Tutikov, the vice-rector on the research work of ISPEU



The welcoming speech of Alexander Sorokin, the Dean of ISPEU Electrical Power Engineering Faculty



The welcoming speech of Arkadiy Makarov, the Head of the Competition organization, ISPEU



The welcoming speech of Dar'ja Morozova, the Coordinator of the Competition



The general view of the room

The pictures of the teams taking part in the Competition





During the Competition



The round-table discussion with the team leaders



The winners' awarding



The congratulation speech of Arkadiy Makarov, the Head of the Competition organization, ISPEU



The congratulation speech of the representative of JSC «System Operator of United Power System»



The congratulation speech of V.Y. Ilushko, the deputy chief engineer of JSC "Territorial Generating Company #2"



The awarding of Sergey Kononov, the student of ISPEU, for the 1st prize in overall ranking



Sergey Tararykin the rector of ISPEU awarded the winners of the Competition



The awarding of Il'ja Tarasov, the student of National Research Irkutsk State Technical University, for the 3rd prize in the individual championship



The awarding of Roman Tutin, the student of Novosibirsk State Technical University, for the 2nd prize in the individual championship



The awarding of Gleb Nesterenko, the student of Novosibirsk State Technical University, for the 1st prize in the individual championship



The awarding of students of Belarusian National Technical University for the 3rd prize in the team championship



The awarding of students of Saint Petersburg Electrotechnical University "LETI" for the 3rd prize in the team championship



The awarding of students of Ivanovo State Power Engineering University for the 2nd prize in the team championship



The awarding of students of Ural Federal University for the 2nd prize in the team championship



The awarding of students of Novosibirsk State Technical University for the 1st prize in the team championship



The picture of the participants of the International Student Competition on Theoretical and General Electrical Engineering part 1



The picture of the participants of the International Student Competition on Theoretical and General Electrical Engineering part 2

